DOMESTIC ENGINEERING

PUBLISHED EACH SATURDAY.
BY
Domestic Engineering, (Inc.)
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MAIN OFFICES:
209-213 North Jefferson Street, Chicago, Ill.

SUBSCRIPTION RATES:
United States, Cuba and Mexico.....$1.00 a year
Canada .....$2.00 a year
Other Foreign Countries.....$3.00 a year
12 shillings. 12 marks. 15 francs.
Single copies of current issue, 5 cents; copies of back numbers, 10 cents each.

REMITTANCES.—Subscriptions are payable in advance, and remittances should be made by check, Chicago draft, postal or express money order, in favor of DOMESTIC ENGINEERING.
CHANGE OF ADDRESS.—The old address should be given as well as the new, and notice should be received a week in advance of the desired change.

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Entered as Second-Class Matter at the Post Office at Chicago, Illinois, Under Act of Congress of March 3, 1879.

Member of the Chicago Trade Press Association.
Member of the Federation of the Trade Press Associations of the United States.

Whole No. 883. Vol. XLIX. No. 7. Chicago, Nov. 13, 1909.

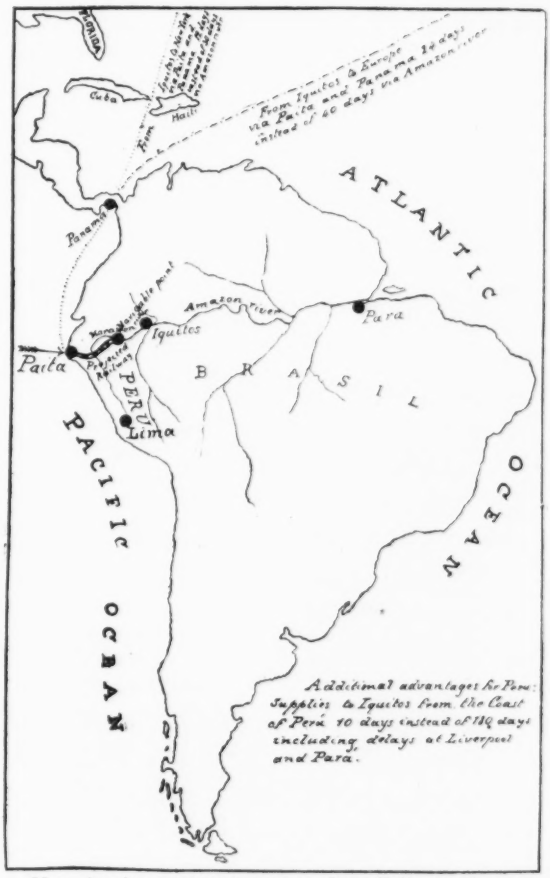
Suggestion:
Cut out; frame neatly; put in show window; change weekly.

IF YOU LIVE IN THE COUNTRY

You can have as complete plumbing and sewage disposal as though your residence was on the Boulevard. You gain immensely in comfort by providing indoor toilet facilities, luxurious bathing and convenient kitchen appurtenances. You remove the human and household wastes completely and without contaminating the air and water supply. You gain fire protection for your buildings. All this improvement can be had, at a cost which is not prohibitive, by arranging for the installation of a compressed air water supply and a septic sewage disposal plant.

A Step in the World's Progress

Because it believes that a person secures a better grasp on conditions which are directly beneath his control by securing a comprehensive knowledge of conditions which effect the world in general, "Domestic Engineering" has frequently directed the attention of its readers to occurrences in history as it is being made, which vitally affect and will ultimately absolutely change the relations between the United States and the countries of Central and South America. Statesmen and



Map showing projected railway from Paita to Maranon, in Peru, which will bridge the Andean Mountains and provide transcontinental communication between the Pacific Coast of Peru and Para, Brazil. Supplies from the coast to the city of Iquitos, Peru, consume now 180 days in transit. The new railway will reduce this time to ten days. Illustration from "Peru To-day," Lima, and here reproduced by courtesy of "American Industries," New York City.

scientists have for years pointed to the Amazonian Valley as the future location of a very great population,

because of the richness of its natural resources, the fertility of its soil and the natural healthfulness and agreeableness of its climate.

The construction of the Panama Canal will bring the manufacturers of the United States in close trade relations with all the republics on the western coast of South America; the shortening of steamship routes which will immediately occur when the engineers of the United States government turn the canal over for the unrestricted use of mercantile navies of the world will place New York, Philadelphia, Savannah, Jacksonville, Tampa, Mobile, New Orleans and Galveston by many miles nearer the importing ports of South America, than are at present the cities from which the largest shipments to those countries are made, Liverpool, Havre and Hamburg.

It therefore requires no stretch of the imagination to understand the immense increase in commercial relations between our country and the importers of plumbing, heating, electrical, mining and mill supplies of the Western Coast republics. We have pointed out numerous times, and take pleasure in again saying that there will also be a **very large trade** to the United States **from the Eastern Coast of South America** by reason of short railway routes across the continent. Particularly will this be true of the great agricultural and pastoral up-lands of Argentina, which lie very much nearer the Pacific than the Atlantic ocean, and which are already, or will be by the time the canal is finished, in direct railway communication with Valparaiso and Santiago in Chile.

"Just Talking Things Over." You should recognize these gentlemen. They are no other than R. Dee Pierce, secretary of M. Glauber & Co., New York City, and H. G. Nye, himself, of the Nye Tool and Machine Works, Chicago, Ill. They are seen here in front of the convention hall, at the recent Detroit meeting. The photograph was made by our Mr. Winslow.

We have also prophesied that at an early date a railway route would be constructed in Peru, which would connect the Amazon River with the coast ports of that country, and thus bring Iquitos, the center of the rubber trade, in direct connection with Peruvian ports, and thence much **nearer the ports of the United States** than they are now, by way of the long journey down the Amazon River to Para and then by ship to continental Europe and Great Britain and thence to this country. It is with great pleasure we are able to announce **an early fulfillment of this prophecy.** We learn from "Peru To-day," a monthly magazine published in Lima, Peru, that the German engineering firm of Koppell, of Berlin, has obtained from the Peruvian government a provisional concession to build a railway from Paita in northern Peru to Marañon, Peru, which will permit quick transportation between the Pacific Coast of Peru to the Atlantic Coast of Brazil. The meaning of this to the inhabitants of Peru can be well understood when we state that it will bring the large output of rubber from Iquitos to Peru in ten days. The journey at present requires 180 days if the route down the Amazon River to Liverpool and thence by steamship around the horn to Paita were followed. It will place Iquitos and Europe within 24 days of each other via Paita and Panama as compared with 40 days as they are at present, down the Amazon River via Para; and it will place Iquitos by way of Paita and the Panama Canal within 12 days of New York City instead of 30 days as it is now by way of the Amazon River.

This railway will mean to the South American Continent what the construction of the first trans-continental line meant to the United States. There are no great engineering difficulties to overcome. The port of Paita is situated opposite the greatest depression of the Andes range, and the railway will have to climb about 7,000 feet, while it is expected if a tunnel of about a mile long can be constructed the elevation will be cut down to 5,000 feet.

Some of the Commercial possibilities opened by the railway are these: On the plains of the Pacific side of the Andes range are cultivated sugar, cotton, rice, corn, olives, grapes and all semi-tropical fruits. On the plains to the eastward of the Andes are grown coffee, cocoa, and tobacco and the world's most important crop at the present time—rubber. All of the rubber which is produced in the Amazonian region has to be shipped three thousand miles down the river to Para and pay a heavy duty for export. The shipments into these countries at the present time consist mostly of all such products grown in cold climates, such as potatoes, flour, vegetables, meat, lard, butter, condensed milk, etc., all of which are shipped into Iquitos at the present time and sold at prohibitive prices. It is believed that by the construction of this railway the **prices** in the Amazonian Valley **will fall** in most cases to **one-third** and in some cases to **one-tenth** of their present cost.

To manufacturers of the United States, accustomed

as they are to railway communication to almost any point, it sounds incredible that Peruvian products of the coast, such as sugar, alcohol, and others, destined to the rubber lands on the east, have to go first to Liverpool via the Straits of Magellan and from there are reshipped to Para and thence up the Amazon River, a journey of about 20,000 miles. By the construction of the railway the distance will be reduced to four hundred miles and the time to a few days.

Another great development to be expected from the construction of this railway which will **interest every manufacturer in the United States** will be the development of the mines which exist along and near the proposed line, consisting of gold in quartz, and alluvial deposits, silver, copper, lead, iron, petroleum and salt

It is not too soon for manufacturers in the United States to begin to learn how their goods can be sold and used in the countries of South America.

Jno. K. Allen.

Sizes of Traps and of Waste, Main and Drain Pipes

PROVISIONS OF THE NEW CLEVELAND PLUMBING CODE.

By Jno. K. Allen, Mem. Am. Soc. Inspectors of Plumbing and Sanitary Engineers; Mem. Royal Sanitary Institute of Great Britain.

So important are the provisions of the Cleveland Plumbing Code considered by master plumbers, plumbing inspectors and sanitary engineers, that I shall endeavor to present in a series of articles the main features of the Code, illustrated with charts and tables showing the application of the Code's requirements. The first of the series was published in "Domestic Engineering" for October 9, accompanied by a chart which showed how plumbing work was simplified by the new Code, and bore the title "What the Law can do to Simplify Plumbing." This article called forth numerous letters, and I quote from one from Geo. M. Tait, of Sycamore, Ill., a member of the American Society of Inspectors of Plumbing and Sanitary Engineers, as follows:

"Your timely article in "Domestic Engineering" of October 9, 'What the Law Can Do to Simplify Plumbing,' was read with great interest, especially that part relating to the new Cleveland, O., code. It is noticed that all wastes terminate in fitting of vertical stack separately, which is nearly perfect practice. But there is a question of durability connected thereto. Reference C[illegible]ade to the manner of using cast-iron fittings Ormum[illegible] brass soldering nipples. Will not the acTh[illegible] an[illegible]sis be set up between the brass, solder, or l[illegible] and the lead waste pipe?

[illegible]s o[illegible]es a query to which I shall later give attention and concerning which I shall welcome correspondence, suggestions or experiences.

Another valued correspondent, William E. Holmes, an advanced sanitarian and master plumber in Seattle, Washington, wrote:

I consider the article one of the most, if not the most valuable, that has ever been published in your paper.

The second article of the series was published on page 90 of our issue for October 23, under the title "The Cleveland Plumbing Code," and was accompanied by a chart which is, in effect a data sheet, giving much information of value. One correspondent writes:

I am going to make a larger chart and hang it up in the office, as this is the only chart ever issued that gives condensed information for employing and journeymen plumbers.

In this, the third article of the series, I shall give the provisions of the Code governing the sizes of traps, waste and soil pipe branches and stacks and house drains.

Section 147 of the new Cleveland Plumbing Code reads thus:

"No fixture trap shall be placed on any house drain less than one (1) foot above the crown of a main sewer or any back water level except in cases where it is absolutely necessary to install floor drain or fixtures below such level. They shall all be placed on the same branch main provided with both **a gate valve and automatic back water valve** so placed as to control all such fixtures. The **gate valve** shall be placed before the automatic, except that where a cellar drain only is installed, a clean-out only will be required."

Section 148 reads:

"Where house drains are laid below the level of the house sewer connections, they shall discharge into a sump, and be automatically lifted and discharged into the house sewer."

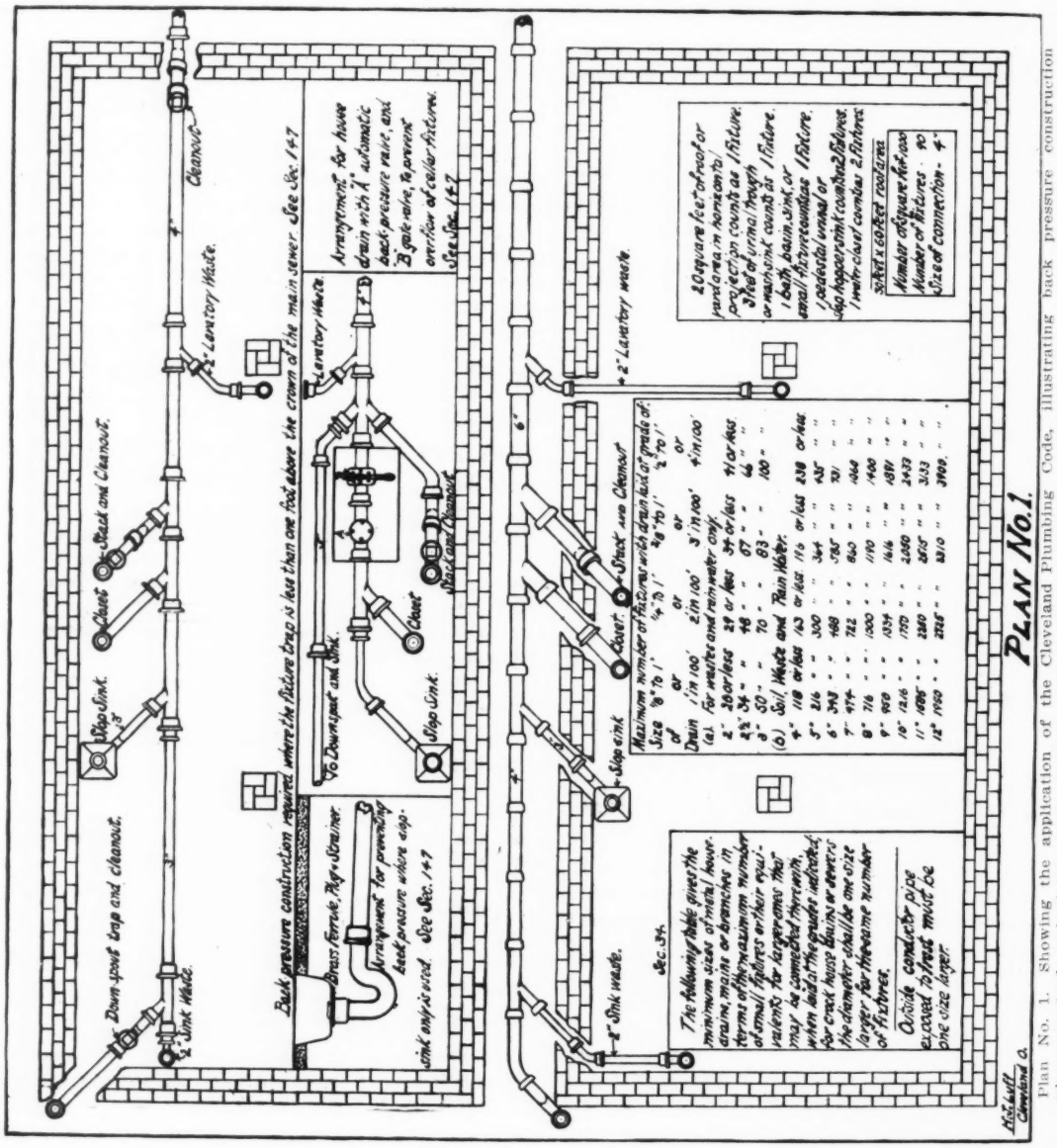
I have had a chart prepared which shows, with other details, the back pressure construction required where the fixture trap is less than one foot above the crown of the main sewer. It will be found near the top of plan No. 1, in the center.

The problem is to locate a sink, slop sink, closet and lavatory on a basement floor where certain of the traps will be placed not less than one foot above the crown of the main sewer. A plan of the house receiving these fixtures is shown at the top of plan No. 1, and in addition to showing the location of the fixtures it shows the size of the main drain, closet waste and soil pipe connection must be 4 inches. The lavatory and sink wastes may be 2 inches, and the slop sink 3 inches. It also shows where the clean-

outs should be located. If all the traps on these fixtures were more than one foot above the crown of the main sewer the design of the job could be as shown at the top of the plan.

In case the low-placed traps of a water closet and slop sink should come lower than one foot above the crown of the main sewer, it will be necessary to rearrange the fixtures so they will enter the house drain above the automatic back pressure valve "A" and gate valve "B". The lavatory and sink traps, placed higher as they are than the slop sink and water closet traps, can waste into the house drain below the gate valve.

In case a slop sink only is used the arrangement is as shown at the left of the center of the plan.


Cleanout
2" Lavatory Waste.
Slop Sink.
Down-spout trap and cleanout.
2" Sink Waste.
Back pressure construction required, where the fixture trap is less than one foot above the crown of the main sewer. See Sec. 147
Arrangement for lower drain with A automatic back pressure valve, and B gate valve, to prevent overflow of cellar fixtures. See Sec. 147
To Down spout and Sink.
Brass ferrule, Flyp Strainer
Arrangement for preventing back pressure where slop sink only is used. See Sec. 147
Stack and Cleanout
Closet
Stack and Cleanout
Slop sink
Cover
Stack and Cleanout
2" Lavatory waste
4" Sink waste
Sec. 34.
The following table gives the minimum size of vertical house drains, mains or branches in terms of the maximum number of small fixtures or their equivalents for large ones that may be connected thereto, when laid to the grades indicated, for cast iron house drains or sewers the diameter should be one size larger for the same number of fixtures.
Outside conductor pipe exceed 10 feet must be one size larger.
Maximum number of fixtures with drain laid at grade of:
Size of Drain
(a) for water and rain water only.
(b) Soil, Waste and Rain Water.
10 square feet of roof or yard area in horizontal projection counts as 1 fixture.
5 feet of urinal trough or washsink counts as 1 fixture.
1 bath, basin, sink, or similar fixture counts as 1 fixture.
Cast iron soil pipe and fittings, galvanized wrought iron or steel pipe and fittings, lead pipe, brass pipe, copper tube or other approved pipe may be used.
Number of square feet of roof area
Number of fixtures
Size of connection
PLAN No. 1.

Plan No. 1. Showing the application of the Cleveland Plumbing Code, illustrating back pressure construction where required, and giving sizes of pipes with number of fixtures permitted, etc.

Sizes of House Drains.

Section 34 of the Code provides for the minimum sizes of house drains with rain water leaders, and reads as follows:

"The following table gives the minimum size

metal house drains, mains of the MAXIMUM NUMBER of small fixtures, or their equivalent for larger ones that may be connected therewith, when laid at the grades indicated; for CROCK HOUSE DRAINS or sewers the diameter shall be ONE SIZE LARGER for the same number of fixtures."

For instant reference I have had the table referred to in the foregoing section placed on the chart,, and the table shows the required minimum sizes of house drains when they receive

a. Wastes and rain water only.
b. Soil, waste and rain water.

In transforming roof or yard area to terms of fixtures, each 20 square feet of roof or yard horizontally projected area counts as one fixture.

Some other transformations into the equivalents of fixtures are:

Three feet of urinal trough counts as one fixture.
Three feet of wash sink counts as one fixture.
One bath is one fixture.
One lavatory is one fixture.
One sink is one fixture.
One pedestal urinal counts as two fixtures.
One slop hopper counts as two fixtures.
One water closet counts as two fixtures.

APPLICATION OF THE CHART.

If the roof area is 30x60 feet, or 1,800 square feet, that area is equivalent to 90 fixtures and the downspout should be three inches, or, if exposed to frost, one size larger.

In the chart the plan of the piping shown just above the table is supposed to reecive waste products from the following:

1,800 square feet of roof, counting as 90 fixtures.
Sink counting as one fixture.
Slop sink counting as two fixtures.
Water closet counting as two fixtures.
Lavatory counting as one fixture.

This makes a total of 90 fixtures if the plumbing is on one floor only.

If the drain is laid at a gradient of one in one hundred it will have to be four inches.

Add to the 96 fixtures as provided for in the foregoing paragraph the plumbing on a second floor, consisting of:

One sink counting as one fixture.
One slop sink counting as two fixtures.
One water closet counting as two fixtures.
One bath counting as one fixture.
One lavatory counting as one fixture.

This adds 7 fixtures to 96 previously provided for, or 103 in all. The house drain could still be four inches in diameter. A third floor with the equivalent of 7 fixtures and even a fourth floor could be added without increasing the diameter of the house drain. If, however, the total number of fixtures exceed 118, the house drain would either have to be increased to five inches or its gradient increased to two in one hundred.

This shows how the proper size of the house drain may be determined for any size building. Thus, if laid at one in one hundred, the six-inch house drain shown in the lowest of the three piping plans would receive the equivalent of 343 fixtures; if laid two in a hundred, 488 fixtures; if laid three in a hundred, 585 fixtures, and if four in a hundred, 731 fixtures.

When rain water does not enter the house drain, and it receives soil and waste only, its size shall be determined by the rules laid down for branch soil and waste pipe (shown below), except in no case may a house drain receiving soil waste be less than four inches nor more than twelve inches in diameter.

SIZES OF WASTE SOIL PIPE STACKS.

The data sheet published on page 90 in our issue of October 23, 1909, gives the required sizes of waste and soil pipe stacks but as it has a close bearing on the sizes of house drains I venture to repeat its publication here.

The maximum number of fixtures connected to a waste or soil pipe branch or main stack shall be:

Table showing the number of fixtures which may be connected to various sized branch and main soil pipes and waste pipes under the provisions of the Cleveland Code, Sections 1120—34, 1120—35 and 1120—36.

Size in Inches.	Water closets on Soil pipe alone.		Fixtures on soil and waste combined		Fixtures on waste pipe alone.	
	Branch.	Main.	Branch.	Main.	Branch.	Main.
4	12	24	48	96	72	144
5	24	48	96	192	144	288
6	42	84	168	336	252	504
7	70	140	280	560		
8	105	210	420	840		
9	145	290	580	1160		
10	200	400	200	1600		
11	265	530	1060	2120		
12	355	710	1420	2840		

In the foregoing table, so far as determining the sizes of waste pipes is concerned, the following notation of fixtures and equivalents is used:

Fixtures provided with:
1¼-inch traps count as one fixture.
1½-inch traps count as one fixture.
2-inch traps count as two fixtures.
2½-inch traps count as three fixtures.

3-inch traps count as four fixtures.
4-inch traps count as five fixtures.

The following table shows the number of fixtures which may be allowed on branch and main wastes of various sizes:

Table showing number of fixtures which may be allowed on branch and main wastes of various sizes under the provisions of the Cleveland Plumbing Code, Section 1120—37.

Sizes of waste pipe in inches.	Number of fixtures allowed on.	
	Branch waste.	Main waste.
1¼	1	0
1½	3 or less	3 or less
2	10 or less	20 or less
2½	16 or less	32 or less
3	30 or less	60 or less
4	72 or less	144 or less
5	144 or less	288 or less
6	252 or less	504 or less

Sizes of Traps.

The following table shows the minimum size of trap required on each fixture and the size of branch waste which must be used for it:

Table showing the minimum size of trap required under each plumbing fixture and the size of branch waste which it must be provided with, according to the provisions of the Cleveland Plumbing Code, Section 1120—38.

Name of Fixture.	Size in inches of	
	Trap required.	Branch waste.
Water closet	3	4
Slop sink with trap combined.	3	3
Slop sink, ordinary pattern...	2	2
Pedestal urinal	3	3
Urinal trough	2	2
Floor drain or wash	3	3
Yard drain or catchbasin	3	3
Laundry trays (one to three).	1½	1½
Laundry trays (four to six....	2	2
Kitchen sinks (small, dwellings)	1¼	1¼
Kitchen sinks (large, hotels).	1½	1½
Sinks, pantry or bar	1¼	1¼
Sinks, pantry (hotel)	1½	1½
Lavatory, single	1¼	1¼
Lavatory (group of 2 or 3)..	1½	1½
Bath tub	1¼	1¼
Bath, shower	2	2
Bath, sitz	1¼	1¼
Safe waste and drip	1	1
Fountains, drinking	1¼	1¼
Fountains, cuspidore	1¼	1¼

In another article I will treat of the sizes of soil, waste and vent stacks, and before this series of articles is closed I hope I shall have presented the salient features of the most important and complete plumbing code yet devised in this country.

Compressed Air Waterworks

By Chas. B. Starkey.

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During the past ten years this country has witnessed what might be called a right-about-face movement in the location of the better class of residences. People having some means now seek a home in the country and freedom from the noise and dirt of the large city.

A few years ago the tide of humanity set toward our cities; now it is reversed and the people who can afford it head for the "tall timbers." Because of this fact, upon the outskirts of our large cities there have sprung up, seemingly in a night, hundreds upon hundreds of fine residences and many large institutions representing an outlay of a surprisingly large amount of money.

Some of these residences and institutions are properly equipped with the best of heating, plumbing, waterworks systems, and sanitary appliances.

Others, for several different reasons, are not up to date along this line.

The Field for Operations Large.

In going over the different localities one is surprised to find the number of small towns that do not have a waterworks system. Likewise investigation proves that many fine residences are struggling along with that make-shift contraption, the water tank in the attic, while different institutions are content to use a stand pipe, located sometimes very dangerously as regards the safety of the building and at the same time being a blot upon the landscape. Stand pipes have a way of bursting, sometimes, and inflicting great damage and occasionally loss of life.

I have been in many towns in level countries and have observed the stand pipes, varying in height from 90 to 120 feet, and in order to get pressure enough to guarantee the safety of all the buildings of the town or city, it is necessary to keep such tanks nearly full of water.

The Attic Tank.

This tank is a nuisance, ineffective, puts a heavy weight at that part of the residence most undesirable, takes up unnecessary room and will leak when least expected. Generally a small force pump is installed at the sink and it takes anywhere from half an hour to an hour or more to elevate the water to the attic.

Of course, there are other means used than the force pump mentioned, to get water into the attic tank, but that is about the cheapest and hence the most common method.

The Use of Compressed Air.

Within the past few years the use of compressed air has become common in many different lines applying to machinery.

Systems are now used for the purpose of supplying water by means of air pressure and those systems are durable, practical, comparatively cheap and

get results that can be obtained by no elevated tank system.

Simple Compressed Air System Explained.

For a residence of moderate size a simple system of this kind would consist of a steel tank holding anyhere from twelve to forty barrels of water; the force pump operated by hand or otherwise; and the necessary valves to control the apparatus, while the system operates after the following manner: Generally (though not of necessity) the tank and pump are located in the basement. This is a matter of convenience and utility. The tank is connected to the force pump by a pipe of the same size as the outlet of the pump. Do NOT "BUSH" THE PUMP'S OUTLET. Next to the tank should be a gate valve—NOT GLOBE.—This valve is useful in holding the pressure when any repairs are to be made upon the pump. Also between the gate valve and pump a check valve should be placed. This will hold the pressure on the tank and not let it kick back on the pump when it is in operation, as the gate valve is useless for this particular purpose.

How the System Works.

Before any water is pumped into the tank it is full of air. Now, when the water is forced in, the air has, of necessity, to occupy less space and AS THE WATER RISES IN THE TANK, THE AIR IS COMPRESSED, and furnishes the force to drive the water through the house pipes.

By means of a first class hand pump, and when the job was entirely tight, I have in this manner worked up a pressure of some 35 pounds upon the system. For a family of four this would last two or three days before the system required pumping up again, which could be done in about twenty minutes' time by any reasonably strong boy of fifteen or sixteen years of age. When more extensive compressed air sytems are used and the pump is operated by a motor driven power a very much greater pressure than 35 pounds may be placed upon the system.

Some of these apparatus approach about as near perfection as can be attained, in as much as they are made automatic in operation and require almost no attention.

The Ideal System for Small Towns and Isolated Dwellings.

With a compressed air arrangement as has been described, any dwelling can be entirely independent and still enjoy all the benefits of a regular waterworks system.

The farmer twenty miles from the city can enjoy his bath and lawn sprinkling the same as his city friend. The protection, in case of fire, is assured; while one can control his own well, or spring-water and not be obliged to use water which is under suspicion.

How to Get This Business.

One would think that with all these facts before the public everybody would have heard of such systems. This is not the case. There are hundreds of farmers (and also many who ARE NOT farmers) in all parts of the country who do not know what an air pressure system is, yet would have one installed if they were properly approached. This is not a black eye upon advertising nor does it display any lack of interest upon the customers' part BUT IT DOES REFLECT GREATLY UPON THE LACK OF ENERGY AND ENTERPRISE UPON THE PART OF THE PLUMBER WHO NEGLECTS TO PUSH THE SPECIALTY LINE. Just suppose for a moment that the plumbers for one year were as energetic and persistent as are the book agents, sewing machine agents or organ and piano men.

If this could be the case for one season, the plumbing and heating business in the United States would be more than doubled, and then some left to spill over around the outer edges.

Systems Easily Installed.

There is nothing complicated about a compressed air installation, nor is it any more difficult to get tight joints than it is in running water pipe upon an ordinary plumbing job, while the profit is good and every job put in is certain to get another in a year's time or even less, while here is only one more instance of a large amount of profitable business waiting to be gathered in by the man who is wise enough to see it, sensible enough to go after it with vigor and who has common sense and tact enough to prepare himself to sell the goods.

Not Her Fault.

"It is the duty of every man and woman to be married at the age of twenty-two," said the lecturer.

'Well," said a woman of thirty, with some asperity, "you needn't tell me that. Talk to the man."—Philadelphia Ledger.

Caller—Nellie, is your mother in?

Nellie—Mother is out shopping.

Caller—When will she return, Nellie?

Nellie (calling back)—Mamma, what shall I say now?—Short Stories.

A Bunch of Good Questions

By Phoenix.

Written expressly for "Domestic Engineering." All rights of republication reserved.

While it is not the general practice of "Domestic Engineering" to answer questions in this particular department of the paper, the following six questions were handed me to answer and also it was suggested that I make a few comments.

These questions were from a practical man in the eastern portion of the United States, who writes that he follows the "Questions and Answers" department of this paper with great interest and profit, and claims to have received considerable benefit from the articles from my stub pen, which has been wielded for the several months past in the interest of **Education, better work** and **more business** for the shops..

I have had the pleasure, once in a while, of observing the questions as they come to the paper from all parts of the country and it is an object lesson in itself to read them and get a grasp upon the mental condition of the different classes of men who **really ask these questions.** Without making any direct criticism upon their letters, I desire to mention one point which crops out plainer than the nose on a Yankee's face, in nearly every letter, and that point is **the want of clearness.** While we say it with blushes and all due modesty **we must claim to know several things,** but we never yet have claimed to know it all or to look with prophetic eyes down the dim vista of the future and be able to tell all that may happen; consequently when some party assumes that by sending us a few dashes of the pen and some general observations (sadly minus any facts) and wants an answer right away, he has the editor of the "Questions and Answers" up a tree. To illustrate the point, suppose some one writes in and says "I have a steam job that hammers and pounds; it has been in four years. I have a number 23 boiler and 700 feet of radiation, the mains are 3" and returns 2", please tell me in your next number what is the matter."

I want to state there are many letters that have been shown to me that do not have even that much information in them about the subject which the writer may be requesting information by return mail.

Now, if any one has followed up the many articles which have appeared in "Domestic Engineering" during the past year (we will let it go at that), they will have discovered that there are several reasons why a steam job might hammer and that the points given would afford but a small chance for one to "get light" upon at this end of the line. A reliable sketch of the job should be given, the pitch of the pipes located, their various sizes, the location of boiler and radiators, whether a dry or wet return is used, the height of the end of the main farthest away from the boiler above the water line and the style of boiler and several other points which will suggest themselves to the reader.

I am going to write out this eastern man's six questions and answer them in this article because they are practical questions and show that the party knew what information he desired and that he wanted answers easily understood. I do not expect everybody to agree with me, but that would be nothing unusual, for we do not all think alike and the heating practice differs quite a little in various sections of the United States.

Question Number One.

When a branch to a steam radiator comes near a 90 degree angle on the main, which is the better way to take it off, before or after, turning the corner?

Answer: Get the steam to the radiator by the shortest route. If that makes you insert the tee before turning the corner all right, and if it would come after the corner is turned all well and good.

The amount of condensation thrown against the elbow at the corner as the main turns should cut no ice whatever, **if the piping is properly proportioned,** and on a steam job, I would not make the steam travel twice or three times the distance necessary, just to avoid friction or condensation at the corner, to say nothing of the extra pipe and covering thrown away and also both fittings and labor.

Question Number Two.

What would be the practice with respect to a 90 degree angle upon the main of a hot water job? Would it be better to take off the branch before or after the corner has been turned?

Answer: I should figure to get the water from the boiler to the radiator in the shortest distance possible and with the least number of turns. I would not worry too much about the 90 degree angle or turn on the main, but I would try to avoid all unnecessary angles upon the branch. On what is called a one pipe hot water job (where the return from the radiator is connected into the flow main) if a radiator came anywhere near the 90 degree angle, I would, if possible, take off the supply for the radiator before turning the corner, and connect in the return after the corner had been turned by the main. However, if such a connection was going to result in more angles upon the branches than would be the case if it were done some other way, I would choose the other way in preference. I should apply the rule of **fewest possible turns** to both the one and two pipe hot water heating systems. You can gamble that the quicker one can get the water to the radiator from the boiler, along the easiest route, the better will be the results obtained, always assuming that one knows how properly to figure the size of both radiators and piping and how to avoid traps.

Question Number Three.

Why is the water drawn into a steam radiator when a compression air valve is used, and when an automatic air valve is put on the trouble disappears?

Answe r: In the first place upon an ordinary gravity job, and **certain vacuum jobs** the water is not drawn into the radiator.

The steam is, however, **pushed into the radiator** and there condenses to water. Now the boiler keeps furnishing more steam and a constant pressure and the ordinary pet cock or the compression air valve (they are not the same) **provides only for the escape of air** and does not provide for the return to the radiator of the

water (or condensation) which will blow out through the opening at the same time the air and steam are escaping. There is steam in the radiator (and consequently condensation) no matter whether an automatic or compression air valve be used, **but the automatic air valve has in it a float** which, when the valve gets full of water, will rise and prevent the water from blowing out, and this water must then return to the radiator. The air can escape, but not the water in a first class automatic air valve.

Question Number Four.

Is it possible to run a low pressure one pipe gravity steam job in such a manner that some rooms will not overheat in mild weather?

Answer: With good reliable automatic air valves this is an easy proposition. The automatic air valves can be so adjusted that but two or three loops on each radiator will heat. Of course the air valves on the radiators nearest the boiler will have to be closed somewhat tighter than the air valves upon the radiators some distance away from the boiler. One may not succeed in getting the job to balance the first time that this experiment is tried, but it can be accomplished by exercising a little patience, and will cause the job to heat to almost any desired extent.

Question Number Five.

Suppose that a top and bottom connection were made on a single pipe connected to a steam radiator at the same end of the radiator. Now at the top of the radiator and connected to the steam pipe we place an ordinary graduated valve, while at the bottom of the radiator we place a check valve which is connected by a tee into the same rising steam pipe. Would this be practical and give more or less steam as desired in the radiator?

Answer: I should consider that when the check valve opened to allow the water to return to the boiler in that single pipe, that the steam, seeking an easier and shorter entrance to the radiator than that afforded by the graduated valve at the top, would conflict with the water at the check valve point and cause trouble, and should not advise this form of connection.

Question Number Six.

What can be done to a one pipe circuit vacuum job that will hold 20 inches vacuum for about ten days, to prevent its over heating in the early fall and late spring weather?

Answer: That would seem to depend upon what type of vacuum system was used. If the vacuum is obtained by **pushing the air out of the job** by the steam generated in the boiler, I should say to carry less fire. If the vacuum is obtained by using a pump I should say to carry less vacuum as 20 inches is a pretty strong pull and it has been found that two inches of vacuum give better results than from 12 to 20 inches.

In such a case as this I should think that merely enough vacuum developed to start the steam into the radiator would answer, but as I do not claim to know it all, perhaps somebody else will be glad to give us the benefit of their experience.

Questions and Answers

This department is maintained for the use of every reader of "Domestic Engineering." We solicit problems from you and will give them our best attention. In stating your questions please give all of the facts as clearly as possible and when necessary accompany your question with a correct layout of the job.

HOW TO BRONZE A RADIATOR.

251.—Syracuse, N. Y.—To the Editor of "Domestic Engineering." Sir: Can you tell me the best way to bronze a radiator and should the side next to the wall be bronzed?

Oneida.

The side next to the wall should be bronzed with one coat of bronze. Many years ago radiators were painted with varnish and the bronze rubbed on with a flannel cloth. This was a slow and costly method and the radiators generally looked like unto a spotted horse. The bronze and liquid are generally mixed, and the resulting mixture painted on with a brush suited to the work. A better, but somewhat slower method is to place the bronze and liquid in separate dishes. Now first dip the brush lightly in the liquid and then in the bronze, after which rub out the brush's contents on the surface of the radiator. Then renew the charge of bronze and liquid. It takes a little more time to put on bronze in this manner, but it will give a much better job, and the material will go much farther.

WHAT AILS THESE RANGE BOILERS?

San Mateo, Calif.—To the Editor of Domestic Engineer," Sir: I am a subscriber for your paper and will ask for informaiton on inclosed plans, as I have had trouble in making them work. The water does not

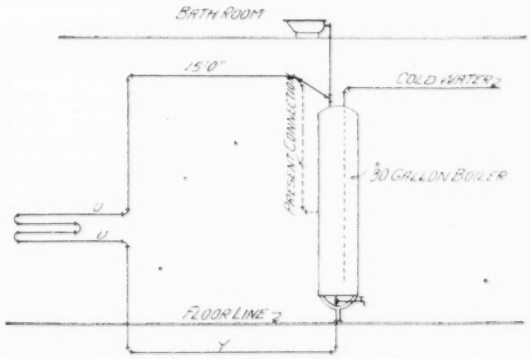


Fig. 1. Sketch of range boiler job which has troubled C. C. of San Mateo, Cal.

heat hot enough and comes luke warm. The water back is new and the same back has heated a 40 gallon boiler. **C. C.**

In Fig. 1. the cold water pipe is shown descending too far in the boiler. Likewise the boiler itself is located much too low as compared with the position of the water back. The boiler is shown located a distance of 15 feet from the water back and the piping system is bad. We suggest moving the range boiler and in-

stalling it horizontally directly over the stove if possible. The trouble will then disappear.

The cold water feed to the boiler, shown in Fig. 2, is also too long. Both these feeds should be only four inches below the level of the top of the water back. I would suggest connecting the boiler to the water

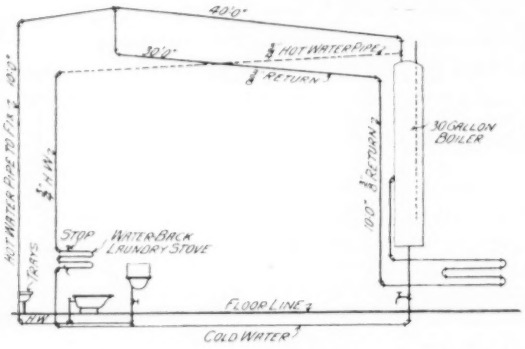


Fig. 2. Sketch of another range boiler job with which C. C., of San Mateo, Cal., has had trouble.

back in the usual manner and if a circulating system is desired, make a separate tapping on the boiler at the bottom and consider the boiler as a base of supply, without reference to the water back.

HOW ABOUT THESE STATEMENTS?

258. Bluefield, W. Va.—To the Editor of "Domestic Engineering." Sir: I just received a copy of "Sizes of Flow and Return Steam Mains," on page No. 16, in which I note that Mr. Stanton's answer reads: "Favor first floor radiators, but always have the ends of the mains connect to second or third floor riser, and not to a first floor radiator unless all the connections are on the first floor." Mr. Honeywell does not recommend taking risers from ends of mains but advocates taking off first floor radiator from end of mains and risers from branches supplying first floor radiator. Please advise me according to your opinion which is proper, and oblige, Yours respectfully,

A Subscriber.

Mr Stanton undoubtedly has reference to open tank systems, in which case we thoroughly agree with his advice.

Mr. Honeywell's statement (or at least what you say he advocates) undoubtedly has reference to pressure work in hot water, which puts a different aspect on the case as an extra pressure of ten or fifteen pounds upon any job will perform miracles for any circulation.

HOW MUCH VACUUM SHOULD BE CARRIED ON A VACUUM JOB?

246.—Augusta, Ga.—To the Editor of "Domestic Engineering." Sir: How many inches of vacuum is it customary to carry on a heating job and which is better, 2 inches of vacuum or 15 inches, provided it can be obtained? **Anxious.**

The amount of vacuum carried depends upon the tightness of the job and the efficiency of the apparatus. A few years ago it was thought necessary to get as much vacuum as could be obtained. Later tests and experiments seem to point that 2 inches of vacuum gives betters results than 15 inasmuch as the vapor and steam are not pulled through the heating pipes and radiators too rapidly.

WANT TO SUB-LET PLUMBING.

Cedar Rapids, Ia.—To the Editor of "Domestic Engineering." Sir: We are doing a general contracting business through Iowa, Illinois, Minnesota, Wisconsin and Missouri, and wish to sub-let our plumbing and heating work as fast as we secure jobs. Master plumbers in these states might communicate with us and if we have work in their neighborhoods we will get into communication with them. Yours truly,

Bartlett & Kling, General Contractors.

[All master plumbers, steam and hot-water fitters do not agree that such work is a good thing; some of them are absolutely opposed to the practice. At the same time we know of many plumbers who successfully carry out this kind of work, and we publish Bartlett & Kling's letter for the benefit of those who desire to engage in it]

WHY DO THESE BOWLS CRACK?

259. Cleveland, O.—To the Editor of "Domestic Engineering." Sir: During the past two or three years we have had occasion to set several closet bowls on cement floors and have noticed that many of them crack. Can you, or any of the readers of you paper give any practical reason why this is so, or how to prevent it? **Euclid.**

We should consider that it was fair to assume that this condition resulted from too much solidity. The writer once had a similar case and when he sat the new bowl used a patent floor flange and cut a rubber gasket for the rim of the closet instead of using putty only and I never heard that the second bowl ever cracked. Here is a chance for others to send in their experience and the cures. Don't be backward about coming forward.

CAN ANYONE TELL US ABOUT THIS GAS PRESSURE?

260. Clyde, N. Y.—To the Editor of "Domestic Engineering." Sir: You stated in an issue some time ago that one reason for low pressure in the natural gas in the state of Kansas was the pressure at times of a high northwestern wind which would reduce the pressure 25 per cent regardless of the temperature of the atmosphere if the wind blew for 24 hours.

Artesian wells in certain sections freeze in winter time even those in which the inner or pump tube is carried below the outer casing. The direct cause of the freezing is an indraft of cold air when the barometer stands high.

Now, isn't there some way in which the pressure is transmitted to under ground channels in a manner to hold down the gas and reduce the pressure? **D.**

This statement was made by a gentleman who read a paper at the meeting of the Kansas Master Plumbers' State Association at Kansas City, Kans. At the present time we have not sufficient data to answer the question fully, but publish it in order that our readers may have a chance to do so, some of them, who have

had experience in the natural gas country can no doubt supply the correct answer.

CHECK VALVE ON COLD WATER SUPPLY TO RANGE BOILER.

262. **Little Rock, Ark.**—To the Editor of "Domestic Engineering." Sir: Some time ago a question was asked in your inimitable paper if it is advisable to put a check valve on the cold water supply pipe of a range boiler to prevent hot water from backing up into the tank in attic where the supply is taken from. You say it is not, and proceed to give your reason. If the water got very hot it would exert such a pressure on the boiler that it would be apt to burst it. I presume when he has taken his supply from a tank he has put on expansion pipe from the highest point of his system and carried it above the tank out through the roof or to some convenient point above the tank to allow for expansion without overflowing into the tank. In that case there can be no pressure exerted on any part of the system, whether the water is cold or hot, even to boiling point. I hold your answer is misleading to young fellows. In fact it is very necessary that a check valve be put on the supply to the boiler for the very reason that should the water become very hot it would back up into the tank in the attic, and suppose your cold water is taken from the same tank to the different fixtures throughout the house, not to speak of water closets, you would be in a nice fix. To my idea your answer should have been "put on a check valve, but be sure you put in an expansion pipe from the highest part of hot water pipes and have it high enough above tank to allow for expansion without overflowing into tank." **A Reader.**

Where the water is fed to the range boiler through a storage tank it all depends how the connections to the range boiler are made. If they are made from the top it is necessary to put in a check valve, but if the feed pipe is taken from the side and trapped it would not be necessary to put in a check valve.

WEIGHT AND CAPACITY OF A SQUARE FOOT OF RADIATION.

233.—**Minneapolis, Minn.**—To the Editor of "Domestic Engineering," Sir: Will you be kind enough to tell me how much a foot of radiation will weigh and about how much water it will contain. **Apprentice.**

There is some difference in the different makes and styles of radiators, but answering this question in general terms we think it is safe to say that a foot of radiation would weigh, for cast iron radiators, something like six and three-quarter or seven pounds, and that the amount of water contained would vary somewhat, but a general average might be quoted of a pint of water per square foot.

THE WEIGHT OF HOT AND COLD WATER.

232.—**Milwaukee, Wis.**—To the Editor of "Domestic Engineering." Sir: Can you give me any accurate figures as to the weight of hot and cold water to settle a difference of some statements I have recently heard. Trusting to see it in your "Questions and Answers" at an early date, I remain. **G.**

Water, per cubic foot, at a temperature of 32 degrees Fahrenheit, weighs 62.42 pounds, and at a temperature of 212 degrees Fahrenheit, a cubic foot of water weighs 59.76 pounds. It will therefore be seen that at the boiling point a cubic foot of water is 2.66 pounds lighter than at the freezing point.

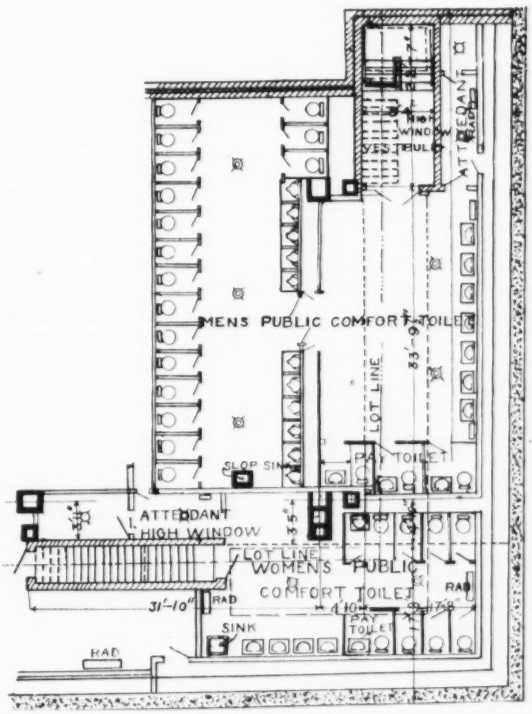
HOW TO FIND LEAKS.

250.—**St. Louis, Mo.**—To the Editor of "Domestic Engineering." Sir: Will you kindly tell me how to find the leaks in a vacuum system? **H.**

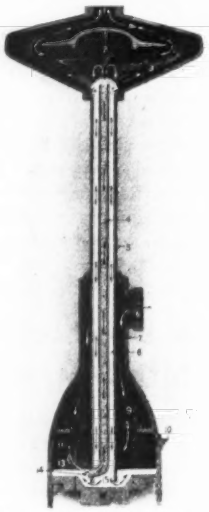
A leak of any considerable size will be easily located by its hissing noise. If the leak is very small it will be hard to find and I should employ the same test for the apparatus as is used in discovering leaks in a job piped for gas, where the leak is located by the sense of smell, due to the ecsaping ether.

Chicago's First Downtown Public Comfort Station

As a result of the editorial activity of "Domestic Engineering," of which the outgrowth was the formation of the United Associations' Committee of the City of Chicago on Public Comfort Stations, this city will soon have its first downtown public comfort station. Through the far-sighted wisdom of Mayor Fred A. Busse and through the action of the Finance Com-



Plan of the first Public Comfort Station in the downtown district of Chicago. It will be constructed as a part of the new city hall, which is now being erected.



Honeywell Heat Generator in operation

WHAT ARE YOU

Are You a Manufacturer's Distributing Agent or a

Do you figure your work in competition with others, bidding low enough to g contracts and hustling eighteen hours a day to make collections to pay for your and materials and charge your loss and gain account at the end of the year "To (in order to make it balance? Are you merely serving as a distributing agent fo manufacturer placing goods of various makes here and there for glory only a pay, or are you showing a profit on your work?

When you estimate on your hot water heating jobs, do you figure on a 1½ pipe to supply one hundred square feet of radiation and the rest of the job in p tion? If you do, you are contributing your time and energy to the upholding antiquated practice, all because, perhaps, you are loath to break away from "th your father did" or the way your boss has taught you.

Father and the boss might have been up-to-date and money makers in their but their time is not now. No one can apply the vogue of the Nineteenth Cent any line of business today and make it show a profit.

Honeywell Hot Water Heating is Twentieth Century heating and the approved s of the present. No large unsightly pipes with this system. No extremely large radi No excessive amount of water to make temperature changes slow and unsatisfactor limit of temperature to 212° when an abundance of heat is wanted, or a cold ra here or there in the house during autumn days when the chill only is to be remov

Honeywell Systems will be found in many European countries, in every state in the Union and every province in Canad heating supplies as well as by all boiler and radiator manufacturers of both the United States and Can

THE HONEYWELL HEATING SPEC

mittee, upon the recommendation of the Special City Hall Building Committee, of which Frances W. Taylor is chairman, plans for a public comfort station have been included in the new city hall now undergoing construction. The location of the station will be underneath the sidewalk at the southwest corner of the building, at the corner of La Salle and Washington streets.

We are able to present from the plans of the architects, Holabird & Roche, kindly furnished us for the purpose, the plan of the station. It will be seen that the entrance to the women's department is from La Salle street, and the entrance for the men's department from Washington street.

The quality of the fixtures are specified as follows in the specifications: The earthenware fixtures shall all be vitreous or adamantose, stamped with the name of the manufacturer under the glaze; a fractured piece of the material must not absorb or show discoloration by red ink after being immersed in the ink for one hour.

Water Closets.—The water closets are to be of large size, siphon jet type, with flushing rim and the bowl is to be of vitreous ware, and each is to weigh not less than 75 lbs. without seat or other attachments. The closets are to be of the oval siphon jet type, with heavy rolled flushing rim so constructed that there will be an even and uniform distribution of water through the entire surface of the bowl when flushing. The bowl shall have 2½-inch limb and outlet and waterway and carry under test a solid ball of not less than 2¼ inches in diameter. The water surface of the bowl is not to be less than 10 by 12 inches, and the depth of the water seal not less than 3¾ inches. The outside width of the bowl is not to be less than 16 inches and the bowl shall be not more than 16½ inches high. The base of each closet is to be ground to a true and even surface. The bowls are each to be of a special type for open front seats, and these seats are to be finished with extra heavy reinforcing. The closets are to be flushed by a nickel plated brass automatic seat operating valve which must have a union connection so that the valve can be taken apart and its working parts removed without taking up the bowl. The working parts of the valve must be of the best quality of steel metal and the springs of phosphor bronze, and its washers are to be of the best quality of virgin rubber. The valve is to have a supply inlet connection, one side of which must not be less than ⅜-inch, and the supply connection to be ⅜-inch brass, iron pipe size, with loose key stop cock to floor or wall, with nickel plated brass flange. The short branch connection to the closet bowl is not to be less than ½-inch pipe. The valve is to be guaranteed against all defects of workmanship and material, cut from silt in water, undue leakage, etc., for eighteen months after the completion of the building. The flushing tanks for these closets are to be tank steel with all joints rivetted and the ends are to be dished. The tanks must be of ample capacity to allow for the proper flush-

BUSINESS FOR?

cting Your Business Your Own Way and at a Profit.

The cutting of timbers and floors to install the small piping of the Honeywell in buildings is entirely done away with. The Honeywell Unique Radiator Valve has ved this problem and makes it possible to turn off one or more radiators in unupied rooms without interfering with the circulation in the piping leading to the es of the unused radiators.

The Honeywell automatic, thermostatic. temperature controlling device keeps the ms at any desired temperature night and day, no matter what the weather may be, saves many trips to the heater as well as many pounds of coal in a year.

27,000 successful installations have proven the Honeywell System of hot water ting pre-emiminent and beyond cavil. This superior system of hot water heating be installed complete for less money than the old style large pipe system which not the advantage of the mercurial seal, improved radiator valves or temperature trolling device.

If you install the Honeywell System your contracts will show a profit and you will e satisfied customers, who are always perpetual advertisers. We will absolutely rantee you against failure if you will let us start you right and tell you how to install r first Honeywell job which we will plan for you without charge if you are regularly aged in the heating business and entitled to trade favors. We will be pleased to er you to any number of Honeywell plants in your vicinity that you may investigate.

Quebec, Canada, alone, are over 600 Honeywell installations. Honeywell equipment is handled by all leading jobbers of throughout Europe by the National Radiator Company of London, England. For full information address

OMPANY, = WABASH, INDIANA

Honeywell Time Clock Thermostat

ing of the closet and for the proper air cushion. In the design of the architects all of the tanks, flushing and supply pipes are to be located back of marble, and all exposed pipe and fittings are to be nickel plated. Where it is necessary to expose the tanks they are to be white enameled finish; where concealed they shall be coated with asphaltum paint.

Lavatories.—The lavatories provided for the Public Comfort Station are of the semi-circular type with 8-inch backs and curved side pieces; the bowls measure 12¾ by 16¾ inches. They are to be of adamantose or vitreous ware, supported by an adamantose or vitreous leg, mounted with enameled white adjustable wall hangers. Each basin is to be fitted with two lever handle, self-closing faucets, with oval spout, with China index buttons for "hot" and "cold."

Urinals.—The urinals are to be of adamantose or vitreous ware, or siphon type, provided with refilling chamber moulded in the ware to provide for a body of water of an area of 8x7 inches after each flush. The back of each urinal is to be ground to fit the slab. Inlet and outlet of each urinal must be integral with the bowl and the outlet shall be through the back of stall. No brass work is to be exposed to view, cap nuts of brass bolts being covered by adamantose or vitreous caps. The urinals are to be flushed from cast iron **automatic flushing tanks,** enameled inside and painted outside, placed behind partitions with suitable rough brass flush pipe connections to each urinal. **Three gallons of water** shall be supplied for each urinal flush. Supply entering top inlet connection shall be of ½-inch iron pipe, finished with stop cocks and flush pipes exposed to view shall be of nickel plated brass.

Seattle's New Plumbing Ordinance

Seattle, Wash.—To the Editor of "Domestic Engineering." Sir: On October 30 a new plumbing ordinance went into effect in this city which, while not a perfect ordinance, represents a great advance over our former provisions. The ordinance is a compromise between the advanced master plumbers and sanitarians who desired a model ordinance and the union journeymen plumbers who were opposed to any change.

Among the master plumbers who were especially active in securing the new ordinance were Claud Eckhart of the Eckhart Plumbing & Heating Co.; John Rossman, of the Modern Plumbing & Heating Co.; D. F. Northfield and Wm. E. Holmes, of the Holmes Plumbing & Heating Co. These men, with Jas. Stephen, architect, F. W. Grant superintenent of buildings, M. T. Stevens, chief sanitary inspector, and James McIntyre, chief plumbing inspector, devoted an entire evening once a week for several months to the preparation of the ordinance. They were hampered by near-master-plumbers and union journeymen working to delay matters and trying to make the changes as few as possible. The new ordinance does not cover all of the improvements its advocates intended.

Wm. E. Holmes has been arrested and has suits pend-

ing in court for the violation of the old plumbing ordinance for installing plumbing to illustrate by practical every day operation that the features of this new ordinance were, practically, as well as scientifically, correct, constituting sanitary practice, and would cost less in most instance than the old method. Mr. Holmes, I understand, will carry the cases now pending through

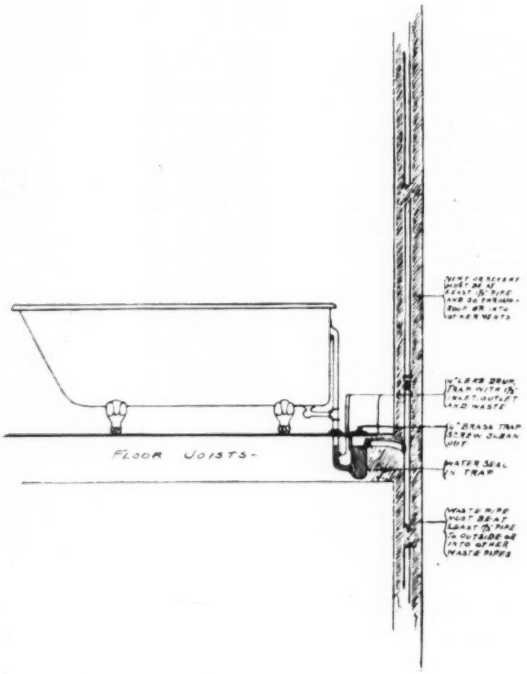


Fig. 1.

the Supreme Court in order to establish the fact that plumbing inspectors cannot enforce an individual to install plumbing in an unnecessarily expensive manner. Mr. Holmes' position is that the municipality can do no more than to require the plumbing to be installed in a manner recognized and demonstratable as sanitary and safe-guarding the public health; that it can no more prescribe specific forms of construction unless such forms are absolutely necessary for the public good, than it could designate particular brands of goods to be used to the exclusion of all others; that it cannot legally require more than perfect sanitation and perfect health protection. The outcome of these suits against Mr. Holmes will be watched with great interest.

In the meantime the new ordinance is interesting and contains provisions which will be studied with care by those who are interested in the regulation of plumbing practice.

The new ordinance makes such a marked saving in the cost of plumbing, especially for cottage and residences, that it interests every Seattle home owner who expects to install plumbing. There is a material reduction in the cost of roughing-in expense. Several drawings have been prepared which illustrate the general principles of installation.

Figure 1 shows the general principles of roughing-in plumbing for the installation of a bath. In this the vent or revent must be 1½" pipe extending through the roof or into other vents. It provides a 4" lead drum trap with 1½" outlet and waste with 4" brass trap screw. The waste pipe must be 1½" to the outside or into other waste pipes.

Figure 2 illustrates the installation of plumbing for toilet, bath and basin. It will be observed that this is on the circuit venting plan. Cast iron, galvanized iron, or lead pipe may be used for both waste and vent pipes. The bath waste and bath vent is 1½" pipe. The basin waste and vent is 1¼" pipe. In this design the water closet is expected to be set directly in front of the waste and vent and is connected to the waste with a sanitary tee and lead bend.

Figure 3 illustrates the principles of installing plumbing for a lavatory. The vent must be at least 1½" pipe extending through the roof or into other vent pipes. The trap must be vented or revented within 18" of

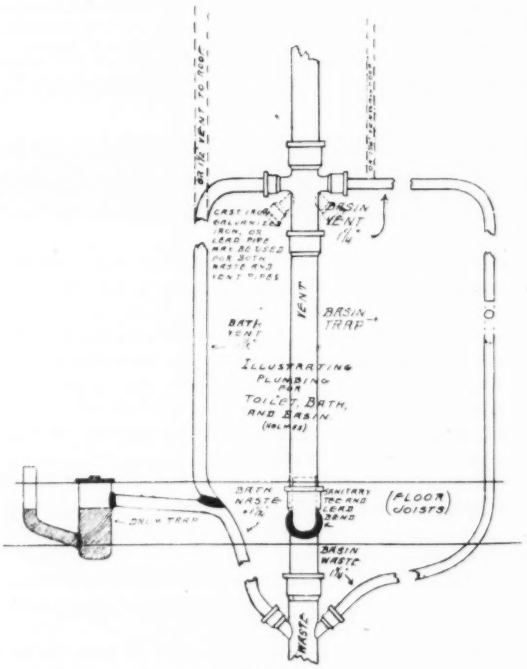


Fig. 2.

the water line in the trap and at a point on the leg or waste of the trap where the top of the trap is not lower than the water line. The trap must be 1¼" pipe to the outside or into other waste pipes. The same principles applying to the installation of lavatories are to be applied in the installation of laundry trays.

Figure 4 illustrates the principles of installing the plumbing for a water closet. In this case the vent or revent is to run through the roof or into other vent pipes. In case the vent is a part of the main stack it

must be at lea t 3" in diameter. If, however, it is for revent only a 2" pipe may be used. Water closet connections must be at least 3" in diameter and must be vented or revented within 18" of the outlet of the toilet bowl. The connection with the main waste may be a sanitary tee or a sanitary Y. If the connection is to a vertical stack the waste must be at least 3" in diameter to the outside or into other waste pipes.

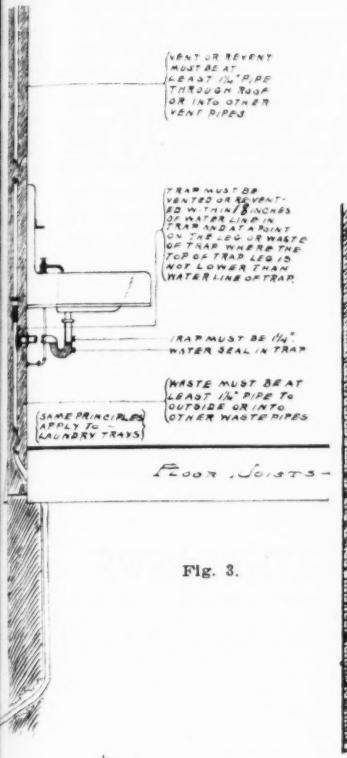

VENT OR REVENT MUST BE AT LEAST 1½" PIPE THROUGH ROOF OR INTO OTHER VENT PIPES
TRAP MUST BE VENTED OR REVENTED WITHIN 18 INCHES OF WATER LINE IN TRAP AND AT A POINT ON THE LEG OR WASTE OF TRAP WHERE THE TOP OF TRAP LEG IS NOT LOWER THAN WATER LINE OF TRAP
TRAP MUST BE 1½" WATER SEAL IN TRAP
WASTE MUST BE AT LEAST 1½" PIPE TO OUTSIDE OR INTO OTHER WASTE PIPES
SAME PRINCIPLES APPLY TO LAUNDRY TRAYS
FLOOR JOISTS

Fig. 3.

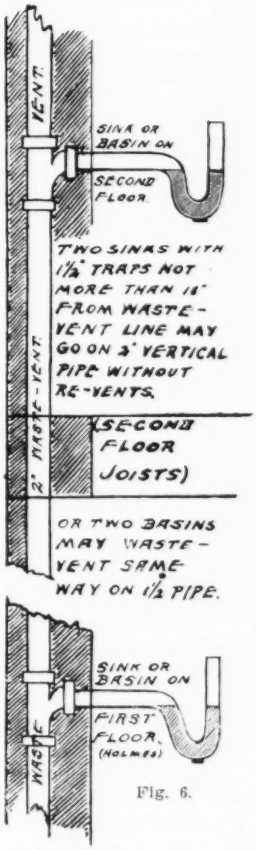

VENT
SINK OR BASIN ON SECOND FLOOR
TWO SINKS WITH 1½" TRAPS NOT MORE THAN 18" FROM WASTE-VENT LINE MAY GO ON 2" VERTICAL PIPE WITHOUT RE-VENTS.
2" WASTE-VENT
(SECOND FLOOR JOISTS)
OR TWO BASINS MAY WASTE-VENT SAME WAY ON 1½ PIPE.

Fig. 6.

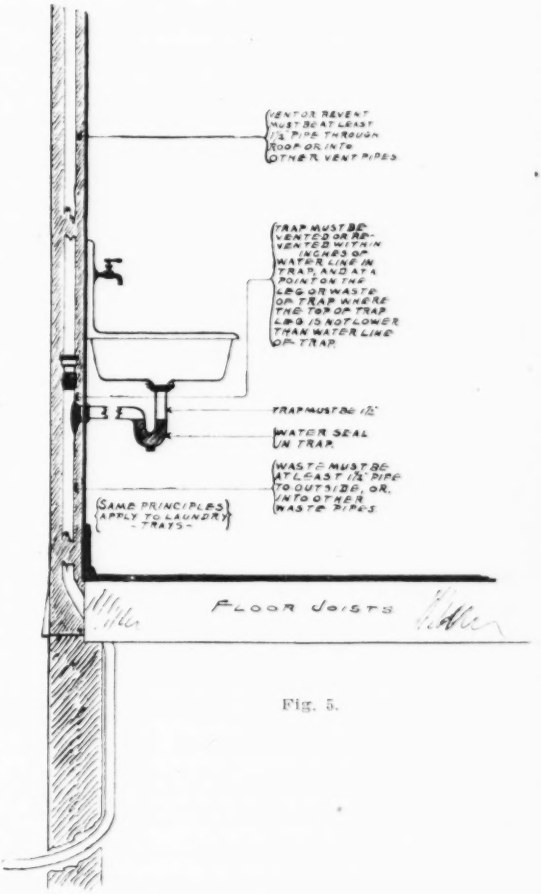

VENT OR REVENT MUST BE AT LEAST 1½" PIPE THROUGH ROOF OR INTO OTHER VENT PIPES
TRAP MUST BE VENTED OR REVENTED WITHIN 18 INCHES OF WATER LINE IN TRAP AND AT A POINT ON THE LEG OR WASTE OF TRAP WHERE THE TOP OF TRAP LEG IS NOT LOWER THAN WATER LINE OF TRAP
TRAP MUST BE 1½"
WATER SEAL IN TRAP
WASTE MUST BE AT LEAST 1½" PIPE TO OUTSIDE, OR, INTO OTHER WASTE PIPES
(SAME PRINCIPLES APPLY TO LAUNDRY TRAYS)
FLOOR JOISTS

Fig. 5.

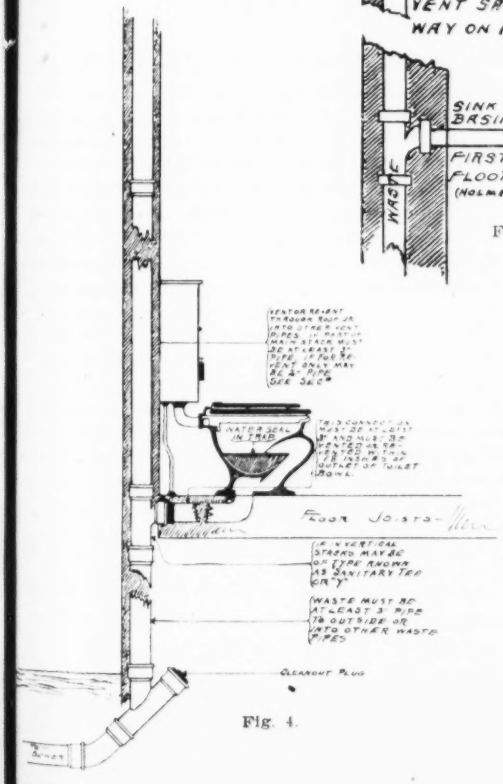

VENT OR REVENT THROUGH ROOF OR INTO OTHER VENT PIPES. IN MASTIC WORK STACK MUST BE AT LEAST 3" PIPE. 2" PIPE TO VENT ONLY MAY BE 2" PIPE. SEE SEC.
WATER SEAL IN TRAP
TRAP CONNECTION MUST BE AT LEAST 3" AND MUST BE VENTED OR REVENTED WITHIN 18 INCHES OF OUTLET OF TOILET BOWL
FLOOR JOISTS
4" VERTICAL STACKS MAY BE OF TYPE KNOWN AS SANITARY TEE OR Y
WASTE MUST BE AT LEAST 3" PIPE TO OUTSIDE OR INTO OTHER WASTE PIPES
CLEANOUT PLUG

Fig. 4.

Figure 5 illustrates the principles of installing plumbing for a sink. The vent or revent must be at least 1½" pipe extending through the roof or into vent pipes. The trap must be vented or revented within 18" of water line in the trap and at point on the leg or waste of the trap where the top of the trap is not lower than the water line in the trap. The trap must be 1½" and the waste pipe must be at least 1½" to the outside or into other waste pipes.

Figure 6 illustrates the principles of installing plumbing for two sinks, one above the other, and is interesting as showing that it provides for the care of two sinks by a 2" waste pipe. The traps must be 1½" and not more than 18" from the waste. Vent lines may be 2" vertical pipe without revent. This supports the

growing tendency of using smaller wastes for more than one fixture.

Figure 7 illustrates the principle of plumbing for a battery of water closets. In this case the main soil pipe is continued up through the roof, and the main horizontal waste must have a fall of ¼" per foot and

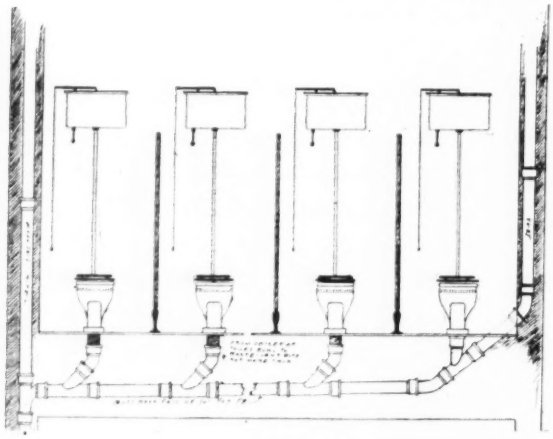


Fig. 7.

the outlet of the toilet bowl cannot be more than 3" from the main horizontal waste. The vent is continued up the same size of the waste.

The ordinance shows the effect of the study of other codes and it has many features which are of interest and value, and we of the trade here in Seattle are very glad indeed that it has come to pass.

Permit me to extend to "Domestic Engineering" my gratitude for presenting in a clear and sane manner the advantages of the regulation of plumbing and plumbers.

A Subscriber.

How You Look to Your Customer

The Managers of Buildings recently had an annual convention in Detroit, Mich., and among the persons present was C. E. Horton, of Seattle, Wash. In discussing the question of repairs on office buildings, Mr. Horton is reported to have said this:

"If your property has no leaky water, gas or sewer pipes, you may rejoice, but remember, nothing is everlasting, and it is only a question which one will last the longest, you or the building; meanwhile, watch your plumber and steamfitter, so that they **do all their work properly**, and allow you to inspect all their work under floors or inside of partitions before the work is covered up. The best of mechanics will become careless if they find that their boss does not take sufficient interest in their work. I have seen as many as twenty plumbers and pipe fitters repair jobs, which have cost the building from $25 up for each case on account of criminal carelessness in repairs. You send a plumber, for instance, to clean a pipe which is stopped up. He first tries to blow the obstruction out with his pump. Then he may try some lye or acid. He may also try a vise snake and if not successful, he will come to you for permission to open up the floor or wall; if he now is certain that you are not likely to inspect his work he will cut a slit in your lead sewer pipe, or drill a hole in the iron pipe, then use his snakes until the pipe is clear. By this time it may be late in the afternoon, anl instead of soldering up your lead pipe or putting a plug in your iron pipe, he will use ordinary elect tape, tape the pipes up, cover up the floor and that may be the last you hear of it for years, then the tape gets bad and another obstruction in the pipe below the cut allows the water and sewerage to flow out between the floors or inside of partition, which in time may ruin the ceiling for several floors below, particularly if the leak is near a column."

This is a bad reputation for any body of tradesmen to have among property owners, and we do not believe that it is general; but certainly it is the business of every plumber, steam and hot water fitter, so to do his work that this sort of a criticism upon it will not be made.

ASSOCIATION NEWS

MASTER FITTERS' ANNUAL DINNER.

Newark, N. J.—The fifth annual banquet of the Master Steam and Hot Water Fitters' Association of this city will be held on Wednesday evening, December 8. The dinner will be served at Davis' Parlors, 943 Broad street. Some good talent will be on hand to entertain the members and guests and a good time is assured. The tickets are $3.50, each.

LATROBE PLUMBERS TO ORGANIZE.

Latrobe, Pa.—At a meeting of the plumbing contractors of this city, held last week, it was unanimously decided to form a local master plumbers' association which will be known as the Latrobe Master Plumbers' Association, and which will be composed of all of the master plumbers of this city, of which there are about a dozen. At this meeting it also was decided to hold another meeting in the immediate future, when the actual organization will take place and a constitution and by-laws drafted and adopted. Officers will also be elected. L. H. Harr, one of the prominent plumbing contractors, will be elected the first president at the organization meeting. The master plumbers of Latrobe are a very prosperous lot, and among the most progressive in western Pennsylvania, so that there is no doubt but that the proposed new organization will be a successful one in every particular.

CONVENTION DATES.

January 18, 19 and 20, 1910.—Sixteenth annual meeting of the **American Society of Heating and Ventilating Engineers**, in New York City. The sessions will be held in Engineering Societies Building, 29 West 39th street.

March 8 and 9, 1910.—Annual convention of **New York State Association of Master Plumbers**, in New York City.

WHOLESALE PLUMBING AND HEATING NEWS

William S. Cooper, Frank T. Merwin and James E. Terry, Jr., all of Philadephia, organize the Cooper Sanitary Mfg. Co.

Chicago Heating Fraternities Enjoy Dinner at the Illinois Athletic Club.

AN IMPORTANT NEW COMPANY IN PHILADELPHIA.

A new manufacturing company is about to be launched in Philadelphia, which, because of the character of the persons behind it, and their wide acquaintance in the trade, makes the announcement of more than usual importance. The company is to be known as the **Cooper Sanitary Manufacturing Company,** and its initial capital stock will be $50,000, and the officers are:

Frank T. Merwin, President.

James E. Terry, Jr., Secretary and treasurer.

William S. Cooper, member of the board of directors and sanitary and mechanical expert.

A suitable building has been secured at Seventeenth and Cuthbert streets, Philadelphia, and it is now being overhauled and remodeled for their sole use. The company will handle a full line of plumbing and steam brass goods and they control many exclusive patents on many such specialties. Their principal work will be as specialists in the manufacture of water closets, and they are going after the business in a unique and effective way. Their beautiful catalogue will show one hundred and forty styles of high and low combinations which will be sold direct to the plumbing trade, who will be called on by an extensive force of skilled salesmen.

William S. Cooper has been connected with the plumbing trade for over fifty years, having entered the employ of McCambridge & Company of Philadelphia in the fifties, where he soon became foreman of the brass shop. On July 10, 1858, he started in business on his own account at Spring Garden and Marshall streets, Philadelphia. His principal work was regrinding ground key cocks. The business grew steadily, and to take better care of it he admitted Thomas J. Jones into partnership in 1862. The firm moved to 527 Commerce street soon after the partnership was formed, remaining there until late in the fall of 1864, when it moved into its own new building at 608-614 Filbert street. In the spring of 1865 John W. Cadbury joined the firm and about 1867 Joel W. Cadbury, the firm name being changed to Cooper, Jones & Cadbury. Having again outgrown its capacity the firm in 1868 moved to 15-19 North Seventh street, where it remained for ten years, when it purchased the building on Ridge avenue, now occupied by Haines, Jones & Cadbury Co. In 1884 Mr. Cooper separated from Cooper, Jones & Cadbury and began business again at 237 North Broad street, moving thence to Fifteenth and Hamilton streets at the time of forming the Wm. S. Cooper Brass Works with James E. and H. Warren Terry. After the fire in 1897 it occupied 234 North Broad street a few months till it moved to 437 North Twelfth street, where it remained till it was consolidated with McCambridge & Co. a few weeks ago. During his long connection with the trade Mr. Cooper has made many improvements in the manufacture of plumbing brass goods and he has secured a large number of patents along this line.

William S. Cooper.

The pioneer plumbing brass goods manufacturer of Philadelphia, who will act as member of the board of directors and as sanitary and mechanical expert of the Cooper Sanitary Mfg. Co., of that city.

There is but one Frank T. Merwin and to every architect and plumber who has ever been interested in high grade sanitary goods he is well and favorably known, having been connected with the Wm. S. Cooper Brass Works for seventeen years.

Mr. Terry was connected with the W. S. Cooper

Brass Works for twenty-one years, in the responsible position of treasurer for much of that time.

At this time, when there is a hungering and thirsting for high grade goods it is an encouraging sign to see

Frank T. Merwin.
President of the Cooper Sanitary Mfg. Co. of Philadelphia.

a company organized to make nothing else. Their efforts will be sincerely appreciated.

FRATERNAL COURTESIES EXTENDED.

Chicago has two organizations of contracting steam and hot water fitters, and fortunately the relations between them are harmonious. On last Saturday evening the Chicago Master Steam Fitters' Association extended a dinner to the Chicago Heating and Ventilating Engineers at the Illinois Athletic Club, covers being laid for sixty. During the dinner a clever entertainer gave several numbers, and at its close August Kehm, president of the Chicago Master Steam Fitters' Association extended a hearty welcome to its guests and introduced Albert W. Long, president of the visiting association, who replied for his organization. Other addresses were made by Robert Gordon, William Sullivan, E. F. Capron, Thos J. Douglass, Fred W. Lamb, Albert S. Wills, William A. Kirk and E. J. McDonaugh. The event proved the wisdom of intercommunication of members of the trade. The following gentlemen were in attendance: W. A. Bunge, Boyd & Co., A. J. Bush, M. J. Craigin, Cusach Bros., Cook & Chick, Arcade Steam Heating Co., Brady & Co., Davis Construction Co., J. J. Dunbarr & Co., L. Deppman & Co., J. C. Duboky, T. J. Douglass & Co., Fred Dilzer, F. J. Englehart, Erlich & Cox, B. J. Farwell, C. Glennon, R. Gordon, J. P. Heintz, Geo. A. Henrich, R. Hardy, J. J. Herlihy, Ideal Heating Co., G. A. Johnson, G. H. Kirk, Kehm Bros .Co., Kroeschell Bros. Co., Lott & Burton, Geo. Lillig & Co., Wm. Lees, Lamb & Co., N. P. Miller, E. J. McDonough, J. S. McBride, Nelson & Wagner, Nilson Bros Co., P. Nacey, J. H. Olson L. H. Prentice Co., Harry Peckham, Jr., G. L. Rood, C. D. Ranney, Rigby & Clansky, Wm. Sullivan, Smith & Stewart, Spear & Hansen, Wills & Smith, Williams & Co., Jno. K. Allen, editor of "Domestic Engineering."

TRADE IN THE NORTHWEST.

A trip through the four northwestern cities, Seattle, Tacoma, Spokane, and Portland, **shows that business is good.** In Seattle the Fair has closed in a way quite satisfactory financially, there will be returned to the subscribers to the stock a little over $100,000 instead of an assessment, which many thought might be necessary. The jobbers say that instead of business falling off after the Fair closed it was actually better than before, and that more building is now going on than at any time since the Fair opened. Tacoma also reports business very good, and in Portland every jobber seems pleased with the situation. In Spokane business is fairly good, not equally good with all dealers. The dullness in the lumber business this summer and fall is probably the cause of the difference between "fairly good" and "very good" business. Crops have been fine and prices are remunerative. Spokane, as well as the other three cities, looks forward to a prosperous year in 1910. The lumber business is starting up nicely, some mills which have been shut down, for months are opening up and some are working night and day. A member of one of the largest companies on the Sound says that one of their mills is working 400 men night and day, and another with 350 men commenced running November 1. It is reported that prospects are very much improved with a large amount of business coming in. With lumber selling freely, the whole Pacific Coast will feel the benefit.

DECLARES USUAL QUARTERLY DIVIDEND.

The United States Cast Iron Pipe and Foundry Company this week declared the usual quarterly dividend of 1¾ per cent on its preferred stock. payable December 1 to stock of record November 20.

OPEN TWO NEW BRANCH HOUSES.

Dodge Manufacturing Company of Mishawaka, Ind. has opened a branch at Minneapolis, Minn, with store at 202-204 Third street, South, and warehouse at 312-320 First street, North. Burke Richards, formerly resident salesman at Cleveland, O., has been promoted to manager of the Minneapolis branch. Dodge Mfg. Co. has also opened a new branch at 54 Marietta street, Atlanta, Ga., in charge of S. L. Dickey.

TO WORK FOR STANDARD OF SOIL PIPE AND FITTINGS.

Walter D. Nolan of Washington, D. C., president of the National Association of Master Plumbers, has requested the Committee on Standardization, appointed by Ex-President Halsey, to confer with a committee from the American Society of Inspectors of Plumbing and Sanitary Engineers, and other interested organizations with the object of establishing soil pipe and fittings standards. It will be remembered that this committee consisted of T. A. Hill (chairman), of New York City; Chas. J. Boyd, of Chicago, and Jeremiah Sheehan, of St. Louis.

PREPARING FOR ANNUAL MEETING OF A. S. H. V. E.

Secretary W. M. Mackay and Chairman of Committee on Tests, Prof. J. D. Hoffman, of the American Society of Heating and Ventilating Engineers, have just issued letters to the members of that organization calling attention to the fact that its next annual meeting will soon be at hand. Secretary Mackay asks that members preparing papers kindly advise him to that effect as soon as possible, thus assisting him in arranging the program, while Prof. Hoffman desires to secure all test data on or before December 1. The meeting will be held in the Engineering Societies Building, 29 West 39th street, New York City, January 18, 19 and 20. 1910.

CHICAGO PLUMBING SUPPLY BOWLING LEAGUE.

The Chicago Plumbing Supply Bowling League held its fourth weekly tournament on Tuesday evening, November 4, on Schindler's alleys, corner Huron street and Milwaukee avenue. The different teams were fully represented and the usual number of games were rolled off with the result that L. Wolff Mfg. Company's team secured the highest game of the evening and of the league, with a score of 900. L. Wolff Mfg. Co. also had high average of the evening for three games, 826 1-3. J. B. Smith, of the Illinois Malleable Iron Co's team, was the individual star of the evening, with an average of 193 for the three games, while J. Carroll, of the Federal-Huber Co's. team, deserves honorable mention for his two good scores, 222 and 206. Secretary Faehse's score card records the events of the evening as follows:

	1st game.	2nd game.	3rd game.
L. Wolff Mfg. Co.	844	735	900
Cameron Schroth Cameron Co.	777	847	769
Federal-Huber Co.	852	785	819
Davies Supply Co.	677	724	733
Illinois Malleable Iron Co.	752	742	788
Western Plumbing Supply Co.	662	615	819
Republic Mfg. Co.	708	697	714
Weil Bros.	621	711	631

THE METAL MARKET

IRON TRADE SLACKENS ITS PACE.

Cleveland. Ohio.—Following the record breaking of October in manufacturing and selling iron and steel products, the trade is showing a disposition to slacken its pace, says "The Iron Trade Review." While specifications on finished products continue heavy, there is not the rush of last month, and at some mills easier conditions are beginning to prevail. In foundry pig iron there is a noticeable decrease in demand, with some indications of weakness, particularly in the south. The sale of 15,000 tons of basic by a Buffalo producer is reported, and inquiries for 10,000 tons of basic from Chicago territory are pending.

COPPER REPORT DISAPPOINTING.

After all that has been said with reference to the position of copper, the metal, the recent report of the Copper Producers' Association was a disappointment. There was a heavy increase in stocks and production. The increase in exports and domestic deliveries did not overtake production and stocks, with the result that stocks remaining were approximately 2,000,000 lbs. above the showing on September 1. Following are the figures in pounds:

	October.	September.	August.
Stocks	151,472,772	135,632,565	122,596,607
Production	124,657,709	118,023,139	120,597,234
Totals	276,130,481	253,655,704	243,193,841
Consumption—			
Domestic	66,359,617	52,105,155	59,614,207
Exports	56,261,238	50,077,777	48,382,704
Totals	122,620,855	102,182,932	107,996,911
Stocks remaining	153,509,626	151,472,772	135,196,930

NEW YORK METAL MARKET, NOVEMBER 10.

Copper, Prime, Lake	$13.12½ to	$13.25
Copper, Electrolytic	13.00	13.10
Lead	4.40	4.42½
Spelter		6.40
Antimony, Cooksons		8.37½
Straits Tin		30.70

CHICAGO IRON MARKET, NOVEMBER 11.

Lake Superior Charcoal	$19.50-	$20.00
Southern, No. 2 Foundry		19.35
Northern, No. 2 Foundry	19.00-	19.50

November 11, 1909.

Foundry iron was the same as the week previous.

$2 more a ton than year previous.

Copper was the same price as the mouth previous

¾ cents less a lb. than the year previous.

NEW YORK OLD METAL MARKET.

New York.—Dealers' buying prices are as follows:

Heavy crucibled copper	$11.75 to	$12.00
Light copper	10.25	10.50
Plumbers' cocks and faucets	9.00	9.50
Heavy brass	8.25	8.37½
Light brass	6.25	6.50
Heavy lead	4.20	4.25
Tea lead	3.90	4.00
Solder joints	6.50	6.75

CHICAGO OLD METAL MARKET.

Chicago, Ill.—Dealers' buying prices are as follows:

Clean heavy copper and trolley wire	$11.75-	$12.00
Light copper		10.75
Heavy yellow brass		8.50
Heavy lead		3.90
Tea lead		3.50

PLUMBING INSPECTORS HONOR A. J. BURNETT.

Melrose, Mass.—Andrew J. Burnett, a former master plumber, now plumbing inspector in this city and Stoneham. who retired from the house of representatives this year after serving four terms in the legislature. has been presented with a set of resolutions by the Massachusetts Association of Plumbing Inspectors in recognition of his work in securing the passage of the bill providing for a state board of examiners of plumbers. Mr. Burnett being associated with the trade took more than usual interest in the bill and it was largely through his efforts that it was finally passed. The resolutions which he has received are engrossed on parchment and are highly valued by Representative Burnett

OBITUARY

Alfred Gawthrop, a pioneer master plumber of Wilmington, Del., and formerly member of the board of directors of the National Association of Master Plumbers, passed on at his home in Wilmington, October 14th, in his 71st year. Mr. Gawthrop was a veteran of the Civil War and had been a resident of Wilmington for more than half a century, taking an active and extensive interest in the business life of the community. He was one of the founders and for many years a member of the plumbing firm of Gawthrop & Brother, retaining his interest until a short time ago, when he retired from active business. His funeral was attended by all the members of the Wilmington Plumbers' Association, as well as by Walter D. Nolan, of Washington, D. C., and William McCoach, of Philadelphia, president and treasurer respectively, of the National Association of Master Plumbers. He is survived by his wife and five children.

The Late Alfred Gawthrop.
Pioneer master plumber of Wilmington, Del., and formerly member of the Board of Directors of the National Association of Master Plumbers.

William H. Victory, one of the best known master plumbers of western Pennsylvania, and a member of McKnight & Victory, one of the oldest firms in the plumbing business in Pittsburg, passed on at his home in that city after an illness which had lasted but three days. His demise was due to a sudden attack of plural pneumonia. Mr. Victory was born in Ireland fifty-seven years ago, and came to this country with his parents when but three years of age. The family settled in Pittsburg, where he resided ever since. He was educated in the local public schools, and then accepted a position as an apprentice in the plumber establishment of Weldon & Kelley, where he learned his trade Soon after completing his apprenticeship, he decided to embark in the plumbing business for himself, formed a partnership with Frank McKnight, and opened a plumbing establishment on Smithfield street, where the business was conducted for many years, until needing more room, the firm moved to Fourth avenue, where it has since been located. The firm is one of the largest and best known in Pittsburg, and has installed some of the largest plumbing contracts that have been completed in that city and vicinity in recent years. Mr. Victory was prominent in various financial institutions and was well known as a fair and most conservative business man, and one who always kept his word in all matters, business or otherwise. He is survived by his widow, three sons, two daughters and a sister, all in Pittsburg. There will be no change in the plumbing business at present at least, as Mr. Frank McKnight will continue in charge.

PERSONAL MENTION

George E. Downe of Chicago is spending some time in Canada.

William H. Fifield, eastern representative of the Peerless Selling Company of Evansville, Ind., has moved his headquarters from 596 Clinton avenue, Albany, N. Y., to 645 State street in that city.

A. Schlett, of the Acme Mfg. Company, Toledo, Ohio, was in Chicago this week in the interest of his company. He was on his way to Milwaukee and other cities in Wisconsin.

J. J. Nagel, a master plumber of Kearney, N. J., was elected councilman of the First ward in that town at its election last week. Kearney went republican at its town election. Mr. Nagel being the only democrat elected, a fact which speaks well for his popularity.

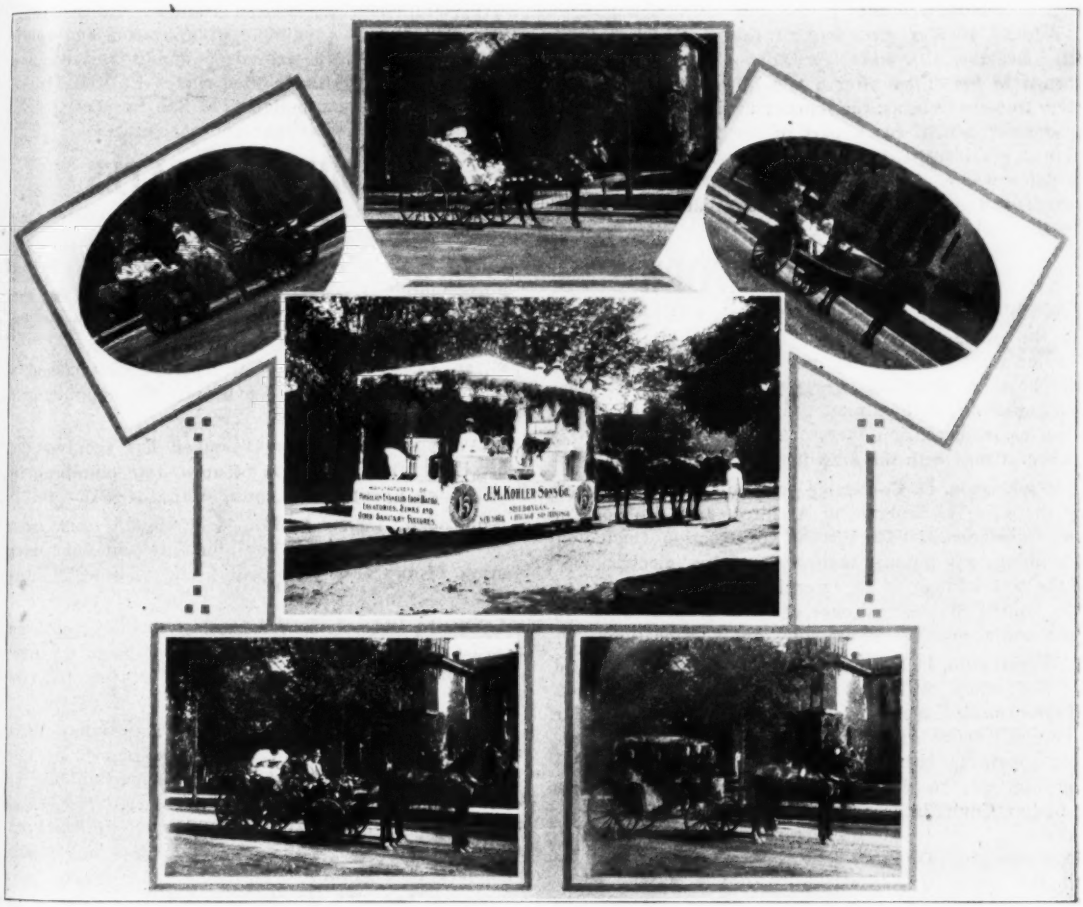
John Lucas has accepted a position with the Haynes-Thompson Company of Philadelphia, Pa. He was until recently associated with the Vapor Heating Company of Philadelphia, and prior to that represented the heating department of the J. L. Mott Iron Works, for which concern he made a host of friends.

Maxwell F. Gilbert, widely known among the heating trade in the East and until recently representing the heating department of the J. L. Mott Iron Works in western New York territory, has associated himself with Bridgman Brothers of Philadelphia, Pa., and will call on the heating trade adjacent to that city in their behalf.

E. M. Withers, Junior partner in plumbing contracting firm of Withers & Son of New York City., who was seriously injured in a street car accident early in September when two high speed interurban cars collided between New Castle, Pa., and Youngstown, O., has

about recovered from his injuries, and has returned to his business duties.

Thomas F. Payne, one of the best known men allied and identified with the plumbing business in Pittsburg, has accepted a position with the Standard Sanitary Manufacturing Company, in that city, to take charge of the water closet department at the Standard Works on Carnegie Technical Schools were opened some years ago, Mr. Payne was appointed Instructor of Plumbing, a position which he still holds, and in the time he has been in charge of this work, has accomplished much real good in the way of imparting plumbing knowledge to the many students in his department. He will continue to hold this position for the present.



J. M. Kohler Sons Company in the Industrial Parade of Sheboygan (Wis.) Homecoming Celebration.

The center picture shows the float of the J. M. Kohler Sons Company, of Sheboygan, Wis., consisting of a model bath-room with large bath on base in center, shower with receptor, baby, foot and sitz baths, and lavatory, with necessary fixtures and accessories, such as towels, bath rugs, mirrors, chairs, etc. The exhibit was in charge of a young lady, dressed in white as a nurse. In the large bath-tub in the center were three small boys in bath robes, who by the aid of bath brushes and sponges amused themselves and some of the spectators. The floral decorations were water lilies and vines and the entire combination made a most attractive exhibit. Reading from left to right the three upper pictures are: President Walter J. Kohler in his Peerless touring car containing his small sons and their friends; Mrs. W. J. Kohler in her Stanhope; "Charlie," the Shetland pony, a family pet, with W. J. Kohler, Jr., at the ribbons. The two lower pictures from left to right are: Mrs. J. M. Kohler and party in her carriage and Mrs. W. J. Kohler and party in her carriage.

Preble avenue, and he will assume his new duties at once. Mr. Payne was for some time a plumbing inspector, and is also an inventor of considerable note, having invented among other plumbing specialties, the Payne frost proof water closet, the Payne self-closing basin check and the Payne closet valve. When the

S. P. Stambach, of the Walls, Owen & Stambach Co., Philadelphia, is remembering his friends in the trade with souvenir cards while he is touring Europe. This week a very handsome card bearing the post mark of Mostar, Herzegovina, reached one of his friends here in Chicago. Mr. Stambach is probably now at

Rome, Italy. He writes that he is enjoying the tour very much.

George D. Howell, of the McCrum-Howell Co., of New York City, has been elected a member of the board of trustees of Trinity college, Hartford, Conn. Mr. Howell was graduated from Trinity in 1882, and has contributed $50,000 toward the $500,000 endowment fund which is being raised. Mr. Howell is now a resident of Hartford, Conn.

Adolph Mueller, president of the H. Mueller Mfg. Co., Decatur, Ill., and New York City, has just returned to his duties after a trip down the Mississippi river to New Orleans, the journey having been made by a steamer which was a part of the fleet that accompained President Taft on his trip down the river. Mr. Mueller was a delegate from the Chamber of Commerce of Decatur, Ill., to the Deep Water Way Convention held in New Orleans.

GOVERNMENT WORK

Washington, D. C.—Sealed proposals will be received at the office of Supervising Architect James Knox Taylor until 3o'clock p. m., November 26, 1906, for the heating, plumbing, gas piping, lighting and conduct systems for the United States Postoffice and Court House and extension thereto at Council Bluffs, Iowa, in accordance with the drawings and specifications.

Washington, D. C.—Sealed proposals will be received at the office of Supervising Architect until 3 o'clock p. m., December 2, 1909, for the construction (including plumbing, gas piping, heating apparatus, electric conduits and wiring) of an extension, remodeling, etc., to the United States Postoffice at New Brunswick, N. J., in accordance with the drawings and specifications.

Washington, D. C.—Sealed proposals will be received at the office of Supervising Architect James Knox Taylor until 3 o'clock p. m., November 30, 1909, for the construction (including plumbing, gas piping, heating apparatus, electric conduits and wiring) of an extension, etc., to the United States Postoffice at New London, Conn., in accordance with drawings and specifications.

Washington, D. C.—Sealed proposals will be received at the office of Supervising Architect James Knox Taylor until 3 o'clock p. m., December 6, 1909, for the construction (including plumbing, gas piping, heating apparatus, electric conduits and wiring) of an extension, remodeling, etc., to the United States Postoffice at Hot Springs, Ark., in accordance with the drawings and specifications.

Washington, D. C.—Sealed proposals will be received at the office of Supervising Architect James Knox Taylor until 3 o'clock p. m., December 15, 1909, for the construction (including plumbing, gas piping, heating apparatus, electric conduits and wiring), of an extension, remodeling, etc., to the United States Postoffice and Court House, Davenport, Iowa, in accordance with drawings and specifications.

Washington, D. C.—Sealed proposals will be received at the office of Supervising Architect James Knox Taylor until 3 o'clock p. m., November 24, 1909, for the construction (including plumbing, gas piping, heating apparatus, electric conduits and wiring), of an extension, remodeling, etc., to the United States Court House, Postoffice, etc., at Montgomery, Ala., in accordance with drawings and specifications.

Washington, D. C.—Sealed proposals will be received at the office of Supervising Architect James Knox Taylor until 3 o'clock p. m., December 18, 1909, for power plant, including boilers, engines. electric generators, switchboard, conduits, wiring, heating and ventilating apparatus, deep well, deep pumps and vacuum cleaning system, for the United States Custom House and Appraisers' Stores buildings at San Francisco, Cal., in accordance with drawings and specifications.

THE MIDDLE STATES

Washington, Ill.—Potts & Ebert have secured the contract for the plumbing in the new high school building. The consideration is $684.50.

Portsmouth, O.—Martin Journey, formerly in the employ of the Trithscheller Company, has opened a plumbing establishment at 225 West Third street.

Silver, Ill.—The board of the village has passed a plumbing ordinance which provides for the appointment of a plumbing inspector.

Ft. Wayne, Ind.—Hugh O'Connell has secured the contract for the installation of up-to-date plumbing in St. Patrick's Lycum. The consideration is $912.

Bainbridge, Ohio.—Jardine & Company has been awarded the contract for the plumbing and hot water heating of the new town hall. The consideration is $1,395.

Lafayette, Ind.—A. E. Werkhoff of this city has been awarded the contract for the steam heating in the new school building at Cicero. Ind. The consideration is $2,000.

Chicago, Ill.—R. T. Lord, formerly conducting a plumbing business at Oil City, Pa., has opened an up-to-date plumbing establishment in his new building at 4010 West Harrison street, in this city. Mr. Lord passed the city examination recently and he has been admitted into membership in the Chicago Master Plumbers' Association.

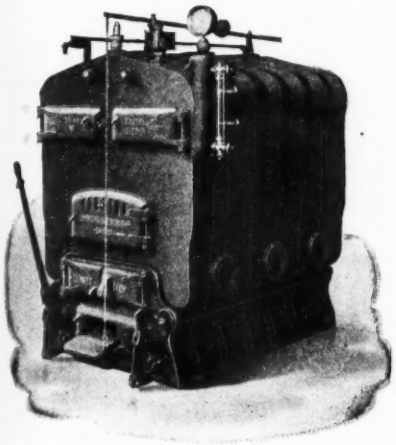
Spencer, Ind.—The Spencer Plumbing Company of this city has been awarded the contract for the installation of plumbing and a low pressure heating system in the court house which is to be erected here. The contract price, excluding the boilers, is $5,800. This company also has a number of other good plumbing and hot water heating contracts on hand, and W. P. Eichenlaub, the proprietor, considers the outlook for next year very bright.

WILL REFUSE TO PAY NEW FEES.

Aurora, Ill.—Several master plumbers in this city are opposed to the new state law authorizing the collection of examination fees of $50 and the annual renewal fee of $10 for master plumbers. A new ordinance complying with the state law was passed Monday evening by the city council and several plumbers declare that they will not pay these fees.

Unified Heating.

"In unity there is strength" and in the combination of two such sturdy heating forces as IDEAL Boilers and AMERICAN Radiators there is the unity of efficiency, economy and durability for one end, the production of good heating results through fitting and worthy mediums.



IDEAL Sectional Steam Boiler.

Either IDEAL Boilers or AMERICAN Radiators express thorough heating efficiency in its best terms yet in the unity of both there is superiority unqualified.

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A Heating Outfit is More Efficient with NORWALL and SYLPHON SPECIALTIES

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Denver, St. Louis, San Francisco

NEW YORK NEWS

Bath, N. Y.—Gould & Nowlen, of this town, have been awarded the contract for the plumbing and heating in the new tuberculosis annex at the hospital of the state soldiers' home.

New York, N. Y.—Knickerbocker Plumbing Company has been incorporated with a capital of $1,000. The incorporators are James Plunkett, Thomas T. Dougherty and T. F. Dougherty, all of 5 West 134th street in this city.

Brooklyn, N. Y.—Frank Hogan, of 4620 Fifth avenue, has secured an enviable line of plumbing contracts which will keep every one at the shop busy for some weeks. Among them are: twenty apartment houses at Forty-fourth street, Sunset Park, for the Landowners Co.; for P. T. Hynes a block of houses on Ft. Hamilton avenue and nineteen houses on Forty-seventh street; two blocks of apartments on Ft. Hamilton avenue from Forty-seventh to Forty-ninth streets for W. McCormick; nineteen houses for Steiner Brothers on Fifty-third street; twelve in Fifty-Fifth street for Donovan Brothers; a row of houses on Seventy-seventh street and three on Fifty-first street for Greene & Co., and six apartments on Seventy-fourth street for Mr. Woods.

New York, N. Y.—William G. Clark, of 438 West Fortieth street, has contracts for the plumbing in six apartment houses at the following locations: 648 East Eleventh street, 513 Tenth avenue, 642 Tenth avenue, 416 West Forty-fifth street, 354 West Forty-fourth street and 457 West Forty-fifth street.

BLANK FOR REPORT

—OF—

Awards of Heating or Plumbing Contracts

(Cut out, fill in and mail promptly)

DOMESTIC ENGINEERING
Chicago

We have been awarded the

Plumbing Contract_____

Heating Contract_____

Kind of Building_____

Amount of Contract_____

Owner's Name_____

Architect's Name_____

Address_____

Our Own Name_____

Address_____

SOUTHERN NOTES

Greensboro, N. C.—W. C. Beasley has opened a plumbing establishment in the Thomas Block on South Davie street.

Northampton, Miss.—N. H. Lee, of this city, has secured the contract for plumbing the new school building at Whateley, Mass.

Charleston, W. Va.—The Gebhart Plumbing Company, of 228 Capitol street, has changed its name to the Standard Heating & Plumbing Company.

Elm Grove, W. Va.—John A. Zarnits has purchased the plumbing business of the Gonder & Birch Company in this town and the transfer has taken place.

Hendersonville, N. C.—J. H. Dittmer and E. H. Forbes have formed a partnership under the name of Dittmer & Forbes and have opened a plumbing establishment here.

Martinsburg, W. Va.—The contract for remodeling the entire heating system in two large public school buildings have been awarded to Harry Hammann of this city. The radiation and piping of the old systems will be entirely torn out and replaced with new.

Wilmington, Del.—Willard W. Lenderman, of 706 Shipley street, has secured contracts for the intallation of plumbing in twenty-two new brick houses, and he also has secured a $3,000 contract for the installation of a heating system in a new building in this city.

Statesville, N. C.—A. W. Holler Plumbing Company in this city has secured the contract for the plumbing and heating in Graham Goodard's new residence. The consideration is $1,665. Wilkins Bros., architects, of Wilson, N. C., prepared the plans for this residence.

Buckhannon, W. Va.—The contract for plumbing the handsome new United Brethern Church here has been awarded to B. J. Follen. Mr. Follen has also received the award of the plumbing for a handsome new residence here.

Cumberland, Md.—The contract for the steam heating system to be installed in the new county jail here has been awarded to McFarlane & Shaffer of this city. These contractors also have been awarded the contracts for the hot water heating systems that are to be installed in six new residences now being built here.

Greenville. S. C.—Barr Hardware Company of this city has secured the contract for the installation of a heating system in the Episcopal Orphanage at Yorkville, S. C. The consideration is $1,800. L. L. Barr of the above company reports that business is in a flourishing condition at Greenville owing to the fact that many new buildings are being erected there.

Master plumbers and master steam-fitters are earnestly requested to send us reports of the award of plumbing and heating contracts of $1,000 or more, as soon as these have been awarded, while the information has news value. Kindly address: Editor "Domestic Engineering," 209-213 N. Jefferson street, Chicago.

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CAPITOL
Auxiliary Heater.

To insure a satisfactory job—one that will recommend you to future customers, you must have the best supplies that you can buy.

"CAPITOL" supplies have always had a reputation for efficiency and durability. We can offer better, if that is possible, than ever before. Examine thse items—they represent a few of our leaders.

Capitol Foot Rests
Hawkins Radiator Shields
Adjustable Feet
Bell Shaped Hot Water Valves
Regular Hot Water and Steam
Valves and Elbows
Packless Valves, regular, corner graduated, and lock shield.
Automatic Air Valves, all styles
Sandusky Stocks and Dies
Armstrong Radiator Trucks
Minneapolis Heat Regulator
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Steam, Vacuum and Altitude Gauges
Perfection Floor and Ceiling Plates
Expansion Tanks—Regular and Automatic
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Auxiliary Heaters
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Pipe Covering
Tool Chests

Our catalog (sent on request) gives full description of these and many other items. We can furnish supplies for any kind of a heating job.

No specialty has been added to the Capitol Line until it has been thoroughly tested. If you secure any specialty from us, you can guarantee it's right. This means something if you were ever troubled with unreliable supplies.

We ask no premium for our care in selecting the best supplies. We supply all that is good at the lowest market prices.

Discount quoted to the regular trade only.

Bell Shaped Hot Water Valve.

United States Heater Company

General Offices and Works: Fort St. and Campbell Ave., DETROIT, MICH.

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CHICAGO	34 Dearborn St.
OMAHA	916 Farnam St.
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DENVER, COLO., Kellogg & Stokes Stove Co.
DULUTH, MINN., Duluth Plumbing Supply Co.

THE OFFICE BOOKSHELF

Power, Heating and Ventilation: A treatise for designing and constructing engineers, architects and students, by Charles L. Hubbard, B. S., M. E., Consulting Engineer. Published by the Technical Press, Brattleboro, Vt., one volume, 647 pages, with 171 illustrations, 9⅛x6 inches, cloth bound, $5.00.

This is a new and comprehensive work by a well recognized author, who has been a generous contributor to the general subject of steam power and heating practice. In this work the author has treated the subject of power more especially from the standpoint of the user of steam, but he has devoted sufficient space to the subject of electrical power to permit an engineer intelligently to arrange his steam plant with reference to requirements for electric light and the distribution of electric power. Mr. Hubbard has wisely confined his work to that class of practice which is more generally in vogue, treating only of plants of small and medium size, such as are usually found in manufacturing establishments, office buildings, and public institutions. Mr. Hubbard has been such a prolific writer upon the various subjects which go to make up power, heating and ventilating engineering that it has been necessary that he should reprint several chapters which have previously been published in "Domestic Engineering" and other technical journals. They have been rewritten and brought together in a co-related manner, which will add greatly to their permanent value.

In Mr. Hubbard's treatment of his subject he found that it naturally fell in three parts. Part one treats of boiler room equipment, and is divided into chapters with the following heads: Heat, steam, boiler horse power, types of boilers, design of tubular boilers, boiler furnaces, boiler settings, chimneys, mechanical draft, liquid fuel, boiler accessories, pipe and fittings, valves, special apparatus, such as feed pumps, plunger pumps, return pumps, traps, separators, extractors, feed water heaters, economizers, boiler corrosion, and care and management of steam boilers. It will be seen that these various chapters are extremely comprehensive in their treatment of this part of the work, and with the very clear illustrations and elementary manner in which the author has treated his work, form a book which will be of extensive use to persons who desire to become acquainted with this kind of engineering.

Part two covers the subject of power and lighting and the chapters bear the following heads: Theory of steam engine, types of engines, condensers, steam and fed piping, electricity, generators, electric motors, electric lighting, care and management of steam engines and generators.

Part three covers the subjects of heating and ventilation and is divided into the following chapters: Systems of warming, ventilation, heat loss from buildings, furnace heating, direct steam heating, indirect steam heating, direct hot water heating, indirect hot water heating, forced hot water circulation, fans, forced blast heating and ventilation, exhaust steam heating, electrical heating, special devices such, as automatic temperature regulation, air compressors, thermostats, valves, dampers, hot water regulators, humidifiers, and air filters and washers, heating and ventilating different types of buildings, care and management of heating and ventilating plants.

Mr. Hubbard's wide experience in designing and superintending the construction of power and heating plants makes his work, considering the very thorough manner in which he does all of his writings, of very great value to the student and engineer.

WITH THE MAKERS

Could Not Find the Name of the Maker of the Closet Hinge.

Plumbers will some day refuse to handle goods which do not bear the name of the maker. It is only a question of time until they all will realize that unmarked goods are the manufacturers' exiled children of whom he is ashamed—sent forth unmarked, never to be heard from by him. They will learn that such goods are undependable, will give trouble to the user and will later arise to confront him with the evidence of their worthlessness. And he will find himself at sea when he seeks to replace a part that has been broken or has worn out.

An incident of this character occurred at Decatur, Ill recently and is strongly suggestive of the value of using marked goods. A resident of that city found the hinge on the closet seat broken, and called on a plumber for repairs. Rigid scrutiny failed to disclose the name of the maker on bowl or seat. The sound hinge was removed and was sent to a number of manufacturers, but was repudiated by all. A few years of wear disclosed the fact that the hinge was made of a cheap composition. The wearing away of the nickel veneering showed that fact. Probably if the plumber had succeeded in getting the hinge to its maker he would have repudiated it also. After several weeks effort the plumber gave up the search and the owner took the hinge to the Mueller Manufacturing Company to have a mate cast in the company's brass foundry. It is a character of work that the company does not seek and does not want, and it was explained that the cost would be greater because of the neccesity of special preparations for the work, but the owner ordered it.

In justice to the plumber and the consumer the manufacturer should mark his goods, unless he is really ashamed of their quality, and the consumer should be urged to steer clear of that kind.

In the Decatur incident an identification mark would have enabled the plumber to replace an insignificant part at a trifling expense. Instead, the consumer had to stand the inconvenience occasioned and the added cost of a small part specially made. It will not increase the consumer's good opinion of plumbing goods. The only person in the transaction who does not suffer is the manufacturer. He is safe from hearing about his goods after they get out of his hands, does not know how they wear and likely does not care.

May Be It.

"Why do you suppose that more blondes than brunetes go crazy?"

"I expect it is because blondes are just naturally light-headed."—Huston Post.

THE SHOP BOOKSHELF

From the Anderson Coupling Co., 558 Capitol Ave., Hartford, Conn: A 4½" x 7" catalogue and price list, containing twenty pages, descriptive of the Anderson patent coupling and expanding pliers, with numerous illustrations.

From American Radiator Company, Chicago: A neat 6x9-inch booklet of sixteen pages, entitled "Best Ways to Run the Boiler." The following list of headings give a good idea of the scope of the book: "General Advices; Economy of Good Draft; General Firing Rules; Weather and Time of Day Firing; Economy and Fuels; Other Rules for Water Boilers and Steam Boilers; The Right Chimney Flues," etc. A very practical and helpful book for the man who owns or has the care of a heating plant.

From the Detroit Lubricator Company, Detroit, Mich.: Catalogue, 6" x 9½", sixty-four pages describing and illustrating Detroit sight feed lubricators, brass and glass oilers, brass and glass oil pumps, oiling devices, grease cups, boiler oil injectors, low water indicators, throttle, steam, hot water and radiator valves. The book exhaustively describes the principle and operation of the several lubricating devices. Everything, including the illustrations is clear and to the point. Prices are quoted on each item. From the same company we have a 3½" x 6¼" booklet of twelve pages illustrating the Detroit radiator valves, with descriptions and prices.

PATENTS

937,931. Valve. Henry Gibbs, Chicago, Ill.

937,959. Pipe-Wrench. Joseph E. Richards, Melrose, Mass.

938,064. Hydrant, Stand-Pipe, and the Like. Hans S. Lange, Christiana, Norway.

938,066. Leg for Bath-Tubs. William H. Lose, Zelienople, Pa., assignor to Iron City Sanitary Manufacturing Company, Pittsburgh, Pa., a corporation of Pennsylvania.

938,075. Water-Purifying Apparatus. Hans Reisert, Cologne, Germany.

938,078. Apparatus for Elevating Water. Olaf A. Roed, Minneapolis, Minn.

938,080. Valve. Frank Schreidt, Mansfield, Ohio.

938,102. L's for Waste and Overflow. James B. Wise, Watertown, N. Y.

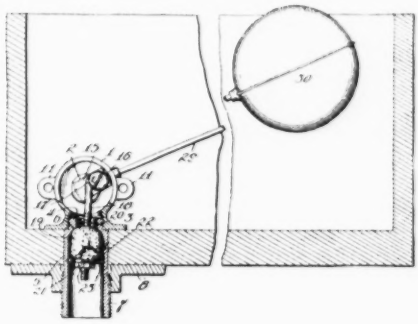
938,145. Fresh-Air Inlet. Eugene B. Henry, San Francisco, Cal.

938,157. Leg Attachment for Lavatories and Other Fixtures. William H. Lose, Zelienople, Pa., assignor to Iron City Sanitary Manufacturing Company, Pittsburgh, Pa., a corporation of Pennsylvania.

938,195. Flushing Apparatus. Charles A. Wulf, Indianapolis, Ind.

938,294. Flush-Tank. Benjamin Walker, Jr., Austin, Texas.

938,470. Ball- Cock. Walter J. Frost, Kneosha, Wis. Among the claims made for the invention are the following: "In a ball cock, a generally cylindrical casing open at one end and provided with an enlarged base support and having a lateral discharge outlet, a tubular inlet extension connected to said base support, a rock shaft journaled to extend through the end wall of the main casing opposite the discharge outlet, at or approximately at right angles to the longitudinal axis of said tubular extension, a crank upon said rock shaft within the casing, an annular valve seat controlling the

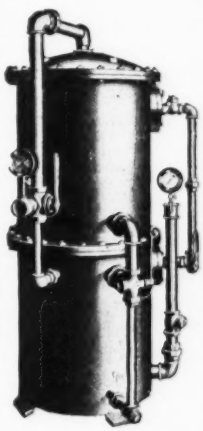


passage through said tubular extension, a valve stem connected with the crank of the rock shaft, a valve plug upon said stem co-operating with said annular valve seat, and a stemmed float connected with the rock shaft externally of the casing and extending radially therefrom."

Burlington, Iowa.—The Russell Sewage Disposal Company, of this city, furnished the sewerless sewage disposal system which was recently installed at the school building in Pittsfield, Ill.—Adv.

Water Filters

for filtering the entire supply of Residences, Office Buildings, etc.



Paddock's Double Water Filter

filters water twice—filter washed with filtered water. Cleaned in ten minutes. 300 to 12,000 gallons per hour.

No chemicals used.

Master Plumbers

We have an especially profitable proposition to submit to live business getters.

Ask us for particulars.

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The rate of advertising under this heading is 25 cents a line, or 5 cents a word, for an insertion, remittance to be made with order. To insure insertion in this column copy should be received not later than Wednesday morning.

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WANTED—Salesmen for up-to-date gas water heater; easy seller, commission. Address 173, "Domestic Engineering," Chicago.

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FOR SALE—An A-1 plumbing shop located in one of Iowa's best towns. Will make terms to suit. Address No. 172, "Domestic Engineering," Chicago.

FOR SALE—The controlling interest of the largest and most profitable plumbing and heating business in the middle West. Full payment not necessary. Best of reasons for selling. None but responsible people should apply. Address No. 171, "Domestic Engineering," Chicago.

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WANTED—TO BUY A PLUMBING SHOP in a good town within 150 miles of Chicago. Address 164, "Domestic Engineering," Chicago.

Plumbing Schools.

LEARN PLUMBING on new buildings in four months. Tools furnished. Master Plumbers' Trade School, 3659 Finney Ave., St. Louis, Mo.

Books.

Sanitation in the Modern Home. By Jno. K. Allen. An invaluable guide to the architect, plumber, heating engineer and house owner, telling just what is necessary to make a house completely sanitary from the subsoil to the roof. 8x5¼ inches; 272 pp.; bound in cloth; postpaid, $2.00. "Domestic Engineering," Chicago.

Plumbing Catechism. By Charles B. Ball. Second edition. This book formulates, in question and answer form, the basic principles of plumbing design and practice. It is therefore especially commended to students in engineering and trade schools, and to master and journeymen plumbers, preparing for examinations. Bound in cloth; 6¾x4¾ inches; 100 pp.; postpaid, $1.00. "Domestic Engineering," Chicago.

Tables for Calculating Sizes of Steam Pipes. By Isaac Chaimovitsch. These tables furnish a method of determining sizes of steam pipes for low pressure heating without laborious mathematical calculations; bound in cloth; 4½x6⅞ in.; 47 pp.; postpaid, $2.00. "Domestic Engineering," Chicago.

Dean's System of Greenhouse Heating by Steam or Hot Water. Directions for obtaining different temperatures; tables of radiation necessary per square foot of glass; tables giving glass surface; sizes of flow and return pipes; explanations so simple all fitters may understand. Cloth bound, 7¾x5½ inches; 46 pp.; postage prepaid, $2.00. "Domestic Engineering," Chicago.

Roughing-in House Drains. Edited by Jno. K. Allen. A complete guide to the work of roughing-in plumbing, from the digging of the sewer to the finishing length of the soil and vent stacks, giving each step to be taken and telling how and why it is done. 6¾x4¼ inches; 184 pp.; bound in boards. Postpaid, 50 cents. "Domestic Engineering," Chicago.

Notes on Heating and Ventilation. Second edition. By Prof. John R. Allen. Written primarily for the steamfitter and designer of heating systems. Reduced to as brief a form as possible, so that readers can readily find notes or data desired. Bound in cloth, 6¾x4¾ inches; 272 pp.; postpaid, $2.00. "Domestic Engineering," Chicago.

"Domestic Engineering" Directory. Published annually in three parts; part I contains directories of great value to the jobber, manufacturer, and dealer in plumbing, heating and mill supply trades; bound in leather, $5.00; part II is illustrative and descriptive of the mentioned trades' specialties; 11¼x8 inches; bound in cloth; part III is in Spanish. "Domestic Engineering," Chicago.

Dean's Steamfitter's Computation Book. Contains figured cubical contents of rooms of different sizes and ceiling heights; also tables showing radiation necessary at various rates per square foot of glass surface, wall surface, or cubic feet; also square feet of glass or wall in surfaces of various dimensions; also cost of selling price of radiators at various market prices. These tables save fitters thousands of arithmetical calculations, giving the answers ready to hand. Leather bound; 7¾x5 inches; 90 pp.; postage prepaid, $2.50. "Domestic Engineering," Chicago.

Swimming Pools. By. Jno. K. Allen. Their construction; cold and hot water supply; various methods of heating the water; directions as to selecting correct sizes of heaters. A practical guide to the subject. Over thirty illustrations; 6½x4¾ inches. Postpaid, 50 cents. "Domestic Engineering," Chicago.

Sanitary Sewerage of Buildings. By Thos. S. Ainge. An authoritative statement of the principles and practice of sewering buildings, including the design and construction of plumbing systems, disposal of sewage in unsewered localities, etc.; 8x5 inches; bound in cloth; 209 pp.; postpaid, $1.50. "Domestic Engineering," Chicago.

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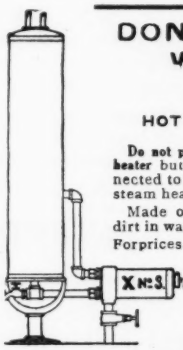

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Made of brass, no rust, no dirt in water.

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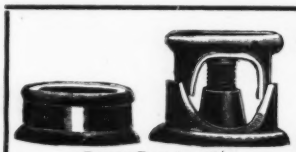

Adjustable Radiator Foot Rest

The time saved on each job pays for them—can be used for bath tubs and other fixtures

The Jennison Company, Fitchburg, Mass.

Patent Dec. 8, 1908

Sold by Jobbers